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**FINAL REPORT
ROUND 7 DAM ASSESSMENT - WISCONSIN POWER & LIGHT
COLUMBIA GENERATING STATION
PRIMARY ASH, SECONDARY ASH, POLISHING & LANDFILL
STORMWATER PONDS
PARDEEVILLE, WISCONSIN**

June 2, 2011

PREPARED FOR:



**U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460**

PREPARED BY:



**GZA GeoEnvironmental, Inc.
19500 Victor Parkway, Suite 300
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GZA File No. 01.0170142.20**

June 2, 2011
File No. 01.0170142.20



Mr. Stephen Hoffman
U. S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Round 7 Dam Assessment - Final Report
EPA Contract No. EP10W001313
Wisconsin Power & Light – Columbia Generating Station
Primary Ash, Secondary Ash, Polishing & Landfill Storm Water Ponds
Pardeeville, Wisconsin

Dear Mr. Hoffman:

In accordance with our proposal 01.P00000177.11, dated August 11, 2010, and U.S. Environmental Protection Agency (EPA) Contract No. EP10W001313, Order No. EP-CALL-0001, GZA GeoEnvironmental, Inc. (GZA) has completed our inspection of the Wisconsin Power & Light, Columbia Generating Station; Primary Ash, Secondary Ash, Polishing & Landfill Storm Water Ponds located in Pardeeville, Wisconsin ("Site"). The Site visit was conducted on September 28, 2010. The purpose of our efforts was to provide the EPA with a Site specific inspection of the impoundments to assist EPA in assessing the structural stability of the impoundments under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act Section 104(e). We are submitting one hard copy and one CD-ROM copy of this Final Report directly to the EPA.

Based on our visual inspection, and in accordance with the EPA's criteria, the Primary Ash, Secondary Ash, and Polishing Pond Impoundments are currently in **SATISFACTORY** condition and the Landfill Storm Water Pond Impoundment is currently in **FAIR** condition, in our opinion. Further discussion of our evaluation and recommended actions are presented in the Round 7 Dam Assessment Report. The report includes: (a) completed Field Assessment Checklists; (b) figures of the impoundments; and (c) selected photographs with captions. Our services and report are subject to the Limitations found in **Appendix A** and the Terms and Conditions of our contract agreement.

We are happy to have been able to assist you with this inspection and appreciate the opportunity to continue to provide you with dam engineering consulting services. Please contact the undersigned if you have any questions or comments regarding the content of this Round 7 Dam Assessment Report.

Sincerely,

GZA GEOENVIRONMENTAL, INC.

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EXECUTIVE SUMMARY

This Inspection Report presents the results of a visual inspection of the Wisconsin Power and Light Company (WP&L) Columbia Generating Station (CGS, Site) Coal Combustion Waste Impoundments in Pardeeville, Wisconsin. The inspection was performed on September 28, 2010 by representatives of GZA GeoEnvironmental, Inc (GZA), accompanied by representatives of CGS.



The CGS is a two-unit coal-fired power plant with a maximum generating capacity of approximately 1,000 Megawatts. Commercial operation of the facility began in the 1970's. Three unlined earthen embankment CCW impoundments known as the Primary Ash Pond Impoundment (PAP), the Secondary Ash Pond Impoundment (SAP), and the Polishing Pond Impoundment (PP) were constructed in the 1970's in conjunction with the CGS facility. Based on comments to the draft report, we understand the purpose of the PAP, SAP and PP is to provide treatment of the process wastewater to ensure compliance with the site WPDES permit, remove settled ash for beneficial reuse or landfilling, and recycle the ash pond water in various facility processes. A fourth impoundment, the Landfill Storm Water Pond Impoundment (LSP), was commissioned in 1984 in conjunction with the on-Site ash landfill. The LSP is a lined earthen embankment structure and stores storm water runoff and sediments from the open cells of the ash landfill.

The size of the impoundments was based on U. S. Army Corps of Engineers (COE) criteria. Based on the maximum height of 23 feet and a storage volume of approximately 72 acre-feet, the PAP was classified as a **Small** sized structure. Based on the maximum height of 23 feet and a storage volume of 204 acre-feet, the SAP was classified as a **Small** sized structure. Based on the maximum height of 10 feet and a storage volume of 5 acre-feet, the PP was classified as a **Small** sized structure. Based on the maximum height of 35 feet and a storage volume of 11 acre-feet, the LSP was classified as a **Small** sized structure. According to guidelines established by the COE, dams with a storage volume less than 1,000 acre-feet and/or a height less than 40 feet were classified as Small sized structures.

Under the EPA classification system, it is GZA's opinion that the PAP and SAP would have a **Significant** hazard potential, the PP would have a **Less than Low** hazard potential, and the LSP would have a **Low** hazard potential.

The PAP, SAP, PP, and LSP have not been given a hazard rating by the Wisconsin Department of Natural Resources. Under the State of Wisconsin classification system, it is GZA's opinion that the PAP and SAP would be classified as **Significant** hazard structures and that the PP and LSP would be classified as **Low** hazard structures. Note that the State of Wisconsin classification system does not have a **Less than Low** hazard potential classification.

Based on the results of the visual inspection, discussions with CGS personnel, and a review of available design documentation, the PAP, SAP, and PP were found to be in **SATISFACTORY** condition and the LSP was found to be in **FAIR** condition. The following deficiencies were noted at each impoundment area.

Primary Ash Pond (PAP)

1. Minor erosion due to wave action along the upstream slope;
2. Minor erosion due to wave action along the downstream slope of the eastern embankment that also forms the upstream embankment of the SAP;

CCW Impoundments
WP&L - Columbia Generating Station

3. Large erosion ditch on the downstream slope near the southeast corner of the impoundment; and,
4. Tree stumps and roots on the downstream slope near the northwest corner of the embankment.

Secondary Ash Pond (SAP)



1. Minor erosion due to wave action along the upstream slope;
2. Minor erosion due to wave action along the upstream slope of the western embankment that also forms the downstream embankment of the PAP; and,
3. Large erosion ditch on the upstream slope near the southwest corner of the impoundment (same erosion ditch noted in Item 3 for the PAP).

Polishing Pond (PP)

1. No routine maintenance plan.

Landfill Stormwater Pond

1. Erosion ditches on the eastern and western embankment;
2. Sparse vegetation in select areas of the upstream slope;
3. Trees up to 15 inches in diameter located on the upstream slope and crest;
4. Animal burrows on the northern and southern embankments; and,
5. Water level above the maximum allowable level of 794.85 feet.

In our draft report, GZA recommended a hydrologic/hydraulic analysis of the PAP, SAP and PP to determine the adequacy of the current operating conditions and design to accommodate the appropriate precipitation event. Since the time of our Site inspection, WP&L has completed a hydraulic/hydrologic analysis of the PAP, SAP, and the LSP and a structural analysis of the PAP and SAP. The following recommendations and remedial measures generally describe the recommended approach to address current deficiencies at the impoundments.

Studies and Analyses:

1. Evaluate the extent of wave action erosion on the upstream slopes of the PAP;
2. Perform a hydrologic/hydraulic analysis of the PP to determine the adequacy of the current and designed operating conditions and design to accommodate the appropriate precipitation event;
3. Evaluate the slope and seepage stability of the LSP based on current operating conditions and methodologies;
4. Confirm the soil and seepage parameters assumed in stability analysis of the PAP and SAP; and,
5. Develop an EAP for the impoundments.

Operation & Maintenance Activities:

1. Documentation of the periodic visual observations of the PAP, SAP and LSP;
2. Maintain copies of the impoundment design and construction documentation on Site.
2. Semi-annual inspection of the PP and LSP in addition to the inspections being completed on the PAP and SAP;
3. Clear deep rooted vegetation stumps from the PAP embankment;
4. Clear deep rooted vegetation from the embankments and crest of the LSP;
5. Add topsoil and reseed areas of sparse vegetation in the LSP; and,
6. Remove excess water from LSP and relocate marker stake to accommodate current maximum water level of 794.85 feet.



Repair Recommendations:

1. Repair erosion ditches present in the PAP, SAP and LSP.

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PREFACE



The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations are beyond the scope of this report.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection, along with data available to the inspection team. In cases where an impoundment is lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is critical to note that the condition of the dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Prepared by:

GZA GEOENVIRONMENTAL, INC.

A handwritten signature in blue ink, appearing to read 'Patrick J. Harrison'.

Patrick J. Harrison, P.E.
Wisconsin License No.: 14164-6



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PRIMARY ASH, SECONDARY ASH, POLISHING & LANDFILL STORMWATER PONDS
WISCONSIN POWER & LIGHT – COLUMBIA GENERATING STATION
PARDEEVILLE, WISCONSIN

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1.0 DESCRIPTION OF PROJECT

1.1 General

1.1.1 Authority



The United States Environmental Protection Agency (EPA) has retained GZA GeoEnvironmental, Inc. (GZA) to perform a visual inspection and develop a report of conditions for the Wisconsin Power and Light Company (WP&L) Columbia Generating Station (CGS, Site) Coal Combustion Waste (CCW) Impoundments in Columbia County, Wisconsin. This inspection was authorized by the EPA under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104(e). This inspection and report were performed in accordance with Request for Quote (RFQ) RFQ-DC-13, dated August 5, 2010 and EPA Contract No. EP10W001313, Order No. EP-CALL-01. The inspection generally conformed to the requirements of the Federal Guidelines for Dam Safety¹, and this report is subject to the limitations contained in **Appendix A** and the Terms and Conditions of our Contract Agreement. The EPA and WP&L reviewed the draft report, dated January 17, 2011, and provided comments to GZA on March 3, 2011. A copy of the EPA and WP&L comments and GZA's response to their comments is included in **Appendix F**.

1.1.2 Purpose of Work

The purpose of this investigation was to visually inspect and evaluate the present condition of the impoundments and appurtenant structures (the management unit) to attempt to identify conditions that may adversely affect their structural stability and functionality, to note the extent of any deterioration that may be observed, review the status of maintenance and needed repairs, and to evaluate the conformity with current design and construction standards of care.

The investigation was divided into five parts: 1) obtain and review available reports, investigations, and data from the Owner pertaining to the impoundments and appurtenant structures; 2) perform an on Site review with the Owner of available design, inspection, and maintenance data and procedures for the management unit; 3) perform a visual inspection of the Site; 4) prepare and submit a field assessment checklist; and 5) prepare and submit a draft and a final report presenting the evaluation of the structure, including recommendations and proposed remedial actions.

1.1.3 Definitions

To provide the reader with a better understanding of the report, definitions of commonly used terms associated with dams are provided in **Appendix B**. Many of these terms may be included in this report. The terms are presented under common categories associated with dams which include: 1) orientation; 2) dam components; 3) size classification; 4) hazard classification; 5) general; and 6) condition rating.

¹ FEMA/ICODS, April 2004: <http://www.ferc.gov/industries/hydropower/safety/guidelines/fema-93.pdf>

1.2 Description of Project

1.2.1 Location



The CGS is located about four miles southeast of the City of Portage in Columbia County, Wisconsin. The entrance to the Site is on Murray Road. The CGS CCW impoundments are located near the power plant, which is located at latitude 43° 29' 10" North and longitude 89° 25' 11" West. A Site locus of the impoundments and surrounding area is shown on **Figure 1**. An aerial photograph of the impoundments and surrounding area is provided as **Figure 2**. The four management units (impoundments) can be accessed by vehicles from earthen access roads from the CGS.

1.2.2 Owner/Caretaker

The CCW impoundments are owned by Wisconsin Power and Light Company as a subsidiary of Alliant Energy, Madison Gas & Electric Company and Wisconsin Public Service Company (collectively, Owners). The CCW impoundments are operated by the WP&L and the CGS.

| | Impoundment Caretaker |
|------------------|--|
| Name | Wisconsin Power and Light, Columbia Generating Station |
| Mailing Address | W8375 Murray Road |
| City, State, Zip | Pardeeville, Wisconsin, 53954 |
| Contact | Jerald L. Lokenvitz |
| Title | Plant Manager |
| E-Mail | geraldlokvitz@alliantenergy.com |
| Daytime Phone | 608-742-0715 |
| Emergency Phone | 911 / (608) 751-3886 (Plant Manager's Cell Phone) |

1.2.3 Purpose of the Impoundments

The CGS is a two-unit coal-fired power plant with a maximum generating capacity of approximately 1,000 Megawatts. Commercial operation of the facility began in the 1970's. Three unlined earthen embankment CCW impoundments known as the Primary Ash Pond Impoundment (PAP), the Secondary Ash Pond Impoundment (SAP), and the Polishing Pond Impoundment (PP) were constructed in the 1970's in conjunction with the CGS facility. Based on comments to the draft report, we understand the purpose of the PAP, SAP and PP is to provide treatment of the process wastewater to ensure compliance with the site WPDES permit, remove settled ash for beneficial reuse or landfilling, and recycle the ash pond water in various facility processes. A fourth impoundment, the Landfill Storm Water Pond Impoundment (LSP), was commissioned in 1984 in conjunction with the on-Site ash landfill. The LSP is a lined earthen embankment structure and stores storm water runoff and sediments from the open cells of the ash landfill.



The PAP functions as a sedimentation basin and receives water and ash from a variety of processes from the CGS. The impoundment also receives excess storm water runoff from the LSP as needed during high precipitation events.² Prior to 2004, most solids would settle in the PAP and the remaining solids would be discharged with water to the SAP. Since 2004, the solids settle in the PAP and the pump house on the northeast portion of the impoundment returns water to the plant for reuse and/or treatment and disposal per the Wisconsin Pollutant Discharge Elimination System (WPDES) permit.³ Solids recovered from the PAP are recycled for beneficial use or disposed of in the active dry ash landfill on Site.

The SAP was not receiving CCW waste materials at the time of our inspection, but can receive water and unsettled solids from the PAP. The solids settle in the SAP and the clarified water is pumped from the SAP to the PP via the pump house near the southeast portion of the SAP. The SAP currently contains fly ash, bottom ash, economizer ash and other products that are transported in the discharge water from the PAP. Since 2004, precipitation that collects in the SAP infiltrates into the ground or evaporates. There is no appreciable drainage area beyond the surface area of the SAP.

The PP was not receiving CCW waste materials at the time of our inspection. Prior to 2004, the PP received water and unsettled solids from the SAP. Any remaining solids were allowed to settle and water was discharged from the PP into a drainage ditch via a spillway. Water travelled through the ditch and was eventually discharged off-Site under WPDES Permit Number WI0002780. The PP currently contains fly ash, bottom ash, and economizer ash and other products that were transported in the water from the SAP. Similar to the SAP, since 2004, precipitation that collects in the PP infiltrates into the ground or evaporates.

The LSP functions as a storage and evaporation basin for storm water runoff from the ash landfill and the material that is transported with the runoff. It receives fly ash, bottom ash, and economizer ash with the storm water runoff from the ash landfill. Water that collects in the LSP is removed by evaporation. During periods of high precipitation, water is transported from the LSP to the PAP via tankers to maintain water levels below the top of the liner.

1.2.4 Description of the Primary Ash Pond Impoundment and Appurtenances

The PAP was designed in 1972 by Sargent & Lundy Engineers of Chicago, Illinois. No construction documentation was available for the impoundment but limited design drawings and reports were on file with the Wisconsin Department of Natural Resources (WDNR) – Solid Waste Division. The following description of the PAP is based on the available design information, the March 31, 2009 “Response to Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act” from Alliant Energy to the EPA, and information provided by CGS.

The PAP is located north of the CGS and was commissioned in 1975. The ash in the southern portion of the original impoundment was dewatered and the area was converted to a landfill in accordance with the WDNR approval⁴. The current impoundment receives ash

² Information regarding the materials received by each impoundment is based on the March 31, 2009 “Response to Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act” from Alliant Energy to the EPA.

³ Based on information provided by CGS on September 28, 2010.

⁴ Based on conversations with the WDNR – Solid Waste Division.



transport water, non-chemical boiler/turbine/precipitator wash and rinse water via a series of pipelines entering the western and southern portions of the pond, as shown on **Figure 3**. A channel is maintained through the ash delta present in the PAP and ash deposited in the channel is recovered for reuse or disposal. The channel is located along the southern, western and northwest portions of the PAP. Water travels through the channel and eventually is returned to the CGS via the pump house located on the northeast portion of the impoundment.

The impoundment consists of an earthfill embankment with a crest length of approximately 4,200 feet⁵ and a general height (from the lowest toe elevation to the top of impoundment) of approximately 23 feet. The impoundment is unlined and the embankments were constructed from native sand and gravel that was placed as “controlled compacted fill”.⁶ Based on the design drawings provided and discussions with CGS personnel, it does not appear the embankments of any impoundments were constructed over wet ash, slag or other unsuitable materials. The impoundment has a surface area of approximately 8.5 acres at the maximum water level elevation of 796 feet Mean Sea Level (MSL) and the ash delta occupies approximately 50 percent of the storage capacity⁷. A gravel access road is present on the top of the impoundment. The elevation of the impoundment varies from approximately 802 feet to 812 feet MSL^{8,9}.

The impoundment embankments were designed with 4-horizontal to 1-vertical (4H:1V) upstream and downstream slopes with the southern and western portions of the impoundment incised into the existing topography.

There are two groundwater monitoring wells (M3, M4R) located near the PAP. In addition, there is an electronic water level monitor and staff gauging station (SG2) located at the pump house.

1.2.5 Description of the Secondary Ash Pond Impoundment and Appurtenances

The SAP was designed in 1972 by Sargent & Lundy Engineers of Chicago, Illinois. No construction documentation was available for the impoundment but limited design drawings and reports were on file with the WDNR – Solid Waste Division. The following description of the SAP is based on the available design information, the March 31, 2009 “Response to Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act” from Alliant Energy to the EPA, and information provided by CGS.

The SAP is located north of the CGS and east of the PAP and was commissioned in 1975. The SAP receives water and unsettled solids from the PAP, via an 8-inch pipeline, and discharged to the PP via the pump house located in the southeastern portion of the impoundment

⁵ The length of the embankments for the impoundments was estimated by GZA using Google Earth Software.

⁶ Based on March 3, 1972 Drawing S-37 by Sargent & Lundy Engineers.

⁷ Surface area and storage volumes of the impoundments based on the March 31, 2009 “Response to Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act” from Alliant Energy to the EPA. Based on GZA’s measurements using Google Earth, this represents the surface area of open water only.

⁸ Elevations of the impoundments are based on topographic contours provided in January 30, 2003 RMT Drawing titled “Water Table Map (October 2002)”.

⁹ GZA originally reported a minimum crest elevation of 805 feet based on information available at the time the EPA checklist was generated.



as shown on **Figure 3**. Waters transferred from the PAP and precipitation that collects in the SAP either infiltrates into the ground or evaporates.

The impoundment consists of an earthfill embankment with a crest length of approximately 4,000 feet and a general height (from the lowest toe elevation to the top of impoundment) of approximately 23 feet. The impoundment is unlined and the embankments were constructed from native sand and gravel that was placed as “controlled compacted fill”.¹⁰ The impoundment has a surface area of approximately 16 acres at the maximum water level elevation of 796 feet MSL and the settled ash products occupy approximately 25 percent of the storage capacity. A gravel access road is present on the top of the impoundment. The top elevation of the impoundment varies from approximately 802 feet to 808 feet MSL.

The impoundment embankments were designed with 4H:1V upstream and downstream slopes with the southern and eastern portions of the impoundment incised into the existing topography. The upstream and downstream slopes were generally vegetated with grass.

There are two groundwater monitoring wells (MW57, MW59) located near the SAP. In addition, there is a staff gauging station (SG1) located at the former pump house.

1.2.6 Description of the Polishing Pond Impoundment and Appurtenances

The PP was designed by Sargent & Lundy Engineers of Chicago, Illinois. No construction documentation or design information was available for the PP. The following description of the PP is based on the March 31, 2009 “Response to Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act” from Alliant Energy to the EPA, and information provided by CGS.

The PP is located east of the CGS and was commissioned in 1975. The PP can receive effluent from the SAP and discharge through Outfall 002 if certain conditions are met as listed in the WPDES Permit. However, since 2004, the PP has not received any effluent from the SAP. Currently, precipitation that collects in the PP infiltrates into the ground or evaporates.

The impoundment is incised into the surrounding topography and has a crest length of approximately 1,050 feet and a general height (from the lowest toe elevation to the top of impoundment) of approximately 10 feet. The impoundment is unlined and the slopes were constructed by excavating and grading native sand and gravel. The impoundment has a surface area of approximately 1 acre at the maximum water level elevation of 802 feet MSL and an estimated 10 cubic yards of ash is present in the impoundment. A gravel access road is present on the top of the eastern side of the impoundment. The elevation of the impoundment is approximately 805 feet MSL. The impoundment currently has slopes of approximately 4H:1V.

There is one groundwater monitoring well (MW83) located near the PP. In addition, there is a staff gauging station (SG4) located near the northern portion of the impoundment¹¹.

¹⁰ Based on March 3, 1972 Drawing S-37 by Sargent & Lundy Engineers.

¹¹ Based on the January 30, 2003 RMT Drawing titled “Water Table Map (October 2002)”.



1.2.7 Description of the Landfill Storm Water Pond Impoundment and Appurtenances

The LSP was designed by Warzyn Engineering Inc. (Warzyn) and constructed in June 1984 by Kaiser Construction Company. An October 30, 1984 report¹² by Warzyn documenting construction of the LSP was on file with the WDNR – Solid Waste Division. The following description of the PP is based on the construction documentation report, the March 31, 2009 “Response to Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act” from Alliant Energy to the EPA, and information provided by CGS.

The LSP is located east of the CGS and the PP as shown in **Figure 2** and was commissioned in 1984. The LSP functions as a storage and evaporation basin for storm water runoff from the ash landfill and the material that is transported with the runoff. Water that collects in the LSP is allowed to evaporate. During periods of high precipitation, water is transported to the PAP via tankers to maintain water levels below the top of the liner.

The impoundment is incised into the existing topography and has a crest length of approximately 1,750 feet and a general height (from the lowest toe elevation to the top of impoundment) of approximately 32 feet. The impoundment is lined and the slopes were constructed by excavating and grading native sand and gravel. The subgrade was compacted with a vibratory roller compactor and hand raked to remove sharp objects. A 30 mil polyvinyl chloride (PVC) liner was placed on the prepared subgrade, the top of the liner was anchored in to the subgrade, and 12 inches of sand was placed on the liner and compacted. The impoundment has a surface area of approximately 10.8 acres at the maximum water level elevation of 798 feet (MSL) and an estimated 400 cubic yards of ash is present in the impoundment. A gravel access road is present on the top of the western side of the impoundment. The elevation of the impoundment crest varies from approximately 803 feet to 830 feet MSL. The northern, eastern, and southern portions of the impoundment have an approximately 3H:1V slope below elevation 810 feet MSL and 2H:1V slope above elevation 810 feet MSL. The western portion of the impoundment has a 4H:1V slope. The slopes are generally vegetated with grass.

There are two groundwater monitoring wells (MW91A, MW91B) located near the LSP. In addition, there is a metal stake pond level marker that is used as an indicator of the water levels in the impoundment. If pond levels approach the elevation of the metal stake, water is removed from the LSP as previously described.

1.2.8 Operations and Maintenance

The impoundments are operated and maintained by CGS personnel. Operation of the impoundments includes operation of the return pumps in the PAP, removal of settled ash in the PAP, monitoring of the water levels in the PAP and LSP, removal of the excess water from the LSP as necessary and periodic inspection of the PAP and LSP. Maintenance of the impoundments includes regular mowing of the PAP and SAP and periodic deep-rooted vegetation removal. There is currently no operation or maintenance of the PP, and no inspection of the PP or LSP.

¹² “Construction Observation Report, Site Preparation for Phase I, Module I, Ash Disposal Facility, Columbia Generating Station, Wisconsin Power and Light Company, Town of Pacific, Columbia County, Wisconsin” by Warzyn Engineering Inc., dated October 30, 1984.



Operation and maintenance of the CGS facility, including the PP, is regulated by the WDNR under WPDES Permit WI0002780. Operation and maintenance of the CGS and PAP, SAP, and LSP is also regulated by the WDNR - Solid Waste Division under two solid waste license numbers: License 3025 applies to the active dry ash landfill including the LSP and License 2325 applies to the closed portion of the PAP, the active portion of the PAP, and the SAP.

The CGS personnel monitor the impoundments according to a series of protocols. These protocols include:

- Monitoring and recording of the water levels in the PAP;
- Periodic visual observation of the impoundments that is typically not recorded;
- Monitoring of the water levels in the LSP on a weekly basis in the Spring and as otherwise needed during high precipitation events; and,
- Semi-annual inspection of the PAP and SAP.

Based on information provided by CGS, the observation and inspection of the impoundments is conducted by CGS personnel and the water levels in the PAP are collected and recorded 5 days per week.

As part of the WDNR Solid Waste Division program, the PAP, SAP, and LSP are inspected on an annual basis or more frequently if WDNR staff are at the Site for other work. A report of the WDNR visual inspection, including recommended actions to correct any deficiencies, is sent to CGS personnel following each inspection. There were no issues noted by the WDNR that were unresolved at the time of our inspection.

1.2.9 Size Classification

For the purposes of this EPA-mandated inspection, the size of the impoundments was based on U. S. Army Corps of Engineers (COE) criteria. Based on the maximum height of 23 feet and a storage volume of approximately 72 acre-feet, the PAP was classified as a **Small** sized structure. Based on the maximum height of 23 feet and a storage volume of 204 acre-feet, the SAP was classified as a **Small** sized structure. Based on the maximum height of 10 feet and a storage volume of 5 acre-feet, the PP was classified as a **Small** sized structure. Based on the maximum height of 35 feet and a storage volume of 11 acre-feet, the LSP was classified as a **Small** sized structure. According to guidelines established by the COE, dams with a storage volume less than 1,000 acre-feet and/or a height less than 40 feet were classified as Small sized structures. The maximum impoundment height and storage volume was based on information provided by CGS.

1.2.10 Hazard Potential Classification

The PAP, SAP, PP, and LSP have not been given a hazard rating by the WDNR. Under the State of Wisconsin classification system, it is GZA's opinion that the PAP and SAP would be classified as **Significant** hazard structures due to no probable loss of human life and the potential for environmental damage. Wisconsin State Rule NR 333.06 defines significant hazard structures as follows:



A significant hazard rating shall be assigned to those dams that have no existing development in the hydraulic shadow that would be inundated to a depth greater than 2 feet and have land use controls in place to restrict future development in the hydraulic shadow. Potential for loss of human life during failure must be unlikely. Failure or mis-operation of the dam would result in no probable loss of human life but can cause economic loss, environmental damage, or disruption of lifeline facilities.

Under the State of Wisconsin classification system, it is GZA's opinion that the PP and LSP would be classified as **Low** hazard structures. Wisconsin State Rule NR 333.06 defines low hazard structures as follows:

Low hazard. A low hazard rating shall be assigned to those dams that have no development unrelated to allowable open space use in the hydraulic shadow where the failure or mis-operation of the dam would result in no probable loss of human life, low economic losses (losses are principally limited to the owners property), low environmental damage, no significant disruption of lifeline facilities, and have land use controls in place to restrict future development in the hydraulic shadow.

Under the EPA classification system, as presented on page 2 of the EPA checklist (**Appendix C**) and the Definitions section (**Appendix B**), it is GZA's opinion that the PAP and the SAP would be considered as having a **Significant** hazard potential. The hazard potential rating is based on no probable loss of human life due to failure, potential environmental impacts and interruption of power generation due to a failure and subsequent loss of PAP capacity. The area downstream of the PAP and SAP is shown on **Figure 2**. Under the EPA classification system, as presented on page 2 of the EPA checklist (**Appendix C**) and the Definitions section (**Appendix B**), it is GZA's opinion that the PP would be considered as having a **Less than Low** hazard potential. The hazard potential rating is based on no probable loss of human life and no probable economic or environmental losses due to a failure of the impoundment and subsequent loss of impoundment capacity. It is GZA's opinion that the LSP would be considered as having a **Low** hazard potential with no probable loss of human life and low probable economic or environmental losses. Probable impacts of the failure of the PP and LSP would be limited to the Owners' property. Due to the incised nature of the PP and LSP, there is no area downstream of the impoundments.

1.3 Pertinent Engineering Data

1.3.1 Drainage Area

Based on the January 30, 2003 RMT drawing titled "Water Table Map (October 2002)", GZA estimates that approximately 15 acres drains into the SAP and 19 acres drains into the LSP. Water that enters the PAP and PP is due to direct precipitation only.

1.3.2 Reservoir

Based on information provided by CGS, the PAP has a surface area of 8.5 acres and a storage volume of 72 acre-feet at a pool elevation of 796 feet MSL. The SAP has a surface area of 16 acres and a storage volume of 204 acre-feet at a pool elevation of 796 feet MSL. The PP has a surface area of 1 acre and a storage volume of 5 acre-feet at a pool elevation of 805 feet



MSL. The LSP has a surface area of 10.8 acres and a storage volume of 11 acre-feet at a pool elevation of 796 feet MSL.

1.3.3 Discharges at the Impoundment Sites

Under normal operating conditions, no water is discharged from the impoundments. Water is pumped from the PAP and returned to the CGS for reuse in the facility operations or treatment and discharge. Precipitation and storm water runoff that enters the SAP and PP infiltrates into the ground or evaporates. Precipitation and storm water runoff that collects in the LSP evaporates or is transported to the PAP.

1.3.4 General Elevations

Elevations were taken from design drawings, reports, and data provided by the CGS. Elevations are based upon the USGS topographic map MSL vertical datum.

Primary Ash Pond Impoundment (PAP)

| | |
|---|------------|
| A. Top of Embankment (Minimum) | 802 feet |
| B. Upstream Water at Time of Inspection | ± 796 feet |

Secondary Ash Pond Impoundment (SAP)

| | |
|---|------------|
| A. Top of Embankment (Minimum) | 802 feet |
| B. Upstream Water at Time of Inspection | ± 790 feet |

Polishing Pond Impoundment (PP)

| | |
|--|-----------------------------|
| A. Top of Embankment (Minimum) | 805 feet |
| B. Upstream Water at Time of Inspection | No water present |
| C. Downstream Tail Water at Time of Inspection | No water present |
| D. Spillway Type | Rectangular, concrete lined |
| E. Upstream Channel | 802 feet |
| F. Downstream Channel | 802 feet |

Landfill Storm Water Pond Impoundment (LSP)

| | |
|--|-------------|
| A. Top of Embankment (Minimum) | 803 feet |
| B. Upstream Water at Time of Inspection | 796 feet |
| C. Maximum Water Elevation ¹³ | 794.85 feet |

1.3.5 Design and Construction Records and History

Based on information contained in the WDNR files for the Site, the PAP, SAP and PP were designed by Sargent & Lundy Engineers. The impoundments were reportedly constructed under the supervision of a professional engineer but no supporting documentation was present in the WDNR files or provided by CGS.¹⁴

¹³ Based on CGS analysis of maximum allowable water elevation to accommodate design rain event based on current operating conditions as provided in November 19, 2010 communication from CGS personnel.

¹⁴ Based on the March 31, 2009 "Response to Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act" from Alliant Energy.



The LSP was designed by Warzyn and constructed in June 1984 by Kaiser Construction Company under the supervision of a professional engineer. Prior to LSP construction, the site was stripped and topsoil removed. The LSP was constructed by excavating and grading native sand and gravel. The subgrade was compacted with a vibratory roller compactor and hand raked to remove sharp objects. A 30 mil PVC liner was placed on the prepared subgrade, the top of the liner was anchored into the subgrade, and 12 inches of sand was placed on the liner and compacted. The construction of the LSP was documented in an October 30, 1984 report by Warzyn titled: "Construction Observation Report, Site Preparation for Phase I, Module I, Ash Disposal Facility, Columbia Generating Station, Wisconsin Power and Light Company, Town of Pacific, Columbia County, Wisconsin."

1.3.6 Operating Records

Operations records for the PAP were provided to GZA by CGS. Water level information from the PAP between June 11, 2010 and September 28, 2010 was provided to GZA. The water levels are measured electronically at the pump house and manually recorded by CGS personnel five days a week. Based on conversations with CGS, visual observations of the PAP pond level are made during daily visits to the impoundment, but are not generally recorded. No operations records are generated for the SAP, PP, and LSP.

1.3.7 Previous Inspection Reports

Visual observations of the impoundments are conducted periodically by CGS personnel but generally not documented. Visual inspections of the PAP and SAP are conducted and documented semi-annually by CGS personnel. In addition, the WDNR – Solid Waste Division visually inspects the PAP, SAP, and the LSP on an annual basis. Based on information provided to GZA, no inspections of the PP are performed.

The two most recent inspections of the PAP and SAP by CGS personnel were conducted on October 5, 2009 and on April 20, 2010. No significant deficiencies were noted by CGS personnel in either report. Animal burrows were noted in the PAP and SAP in the April 20, 2010 report and filling of the burrows was recommended. A copy of the June 3, 2008 WDNR inspection report was provided to GZA. Based on the inspection reports and discussions with WDNR staff, no major deficiencies have been noted by the WDNR.

2.0 INSPECTION

2.1 Visual Inspection

The CGS impoundments were inspected on September 28, 2010 by Patrick J. Harrison, P.E., and Douglas P. Simon, P.E., of GZA GeoEnvironmental, Inc. The weather was sunny with temperatures in the 70°s to 80°s Fahrenheit. Photographs to document the conditions of the impoundments were taken during the inspection and are included in **Appendix D**. Based on information provided by CGS, the water levels of the PAP, SAP, and LSP were elevation 796 feet, 790 feet, and 796 feet MSL respectively. There was no water present in the PP at the time of our inspection. Underwater areas were not inspected, as this level of investigation was beyond of GZA's scope of services. A copy of the EPA Checklist and a separate copy of the GZA inspection checklist are included in **Appendix C**.

With respect to our visual inspection, there was no evidence of prior releases, failures, or patchwork observed by GZA.



2.1.1 Primary Ash Pond Impoundment General Findings

In general, the PAP was found to be in **SATISFACTORY** condition. The specific concerns and minor deficiencies observed are identified in more detail in the sections below. An overall Site plan showing the impoundments is provided as **Figure 2**. A Site plan showing key features of the PAP, including deficiencies observed during the current inspection, is provided as **Figure 3**. The location and orientation of photographs provided in **Appendix D** is shown on the Photo Plan in **Figure 3**.

2.1.2 Primary Ash Pond Impoundment Upstream Slope (Photos 1 through 19)

The PAP water surface elevation at the time of inspection was at an elevation of 796 feet MSL. Therefore, the lower portion of the upstream slope was underwater or covered by ash deltas and not visible. No rip rap was present on the upstream slope and there was wave action erosion of the upstream slope at the pond water elevation throughout much of the impoundment. An example of the observed erosion is shown in Photo 16. The upstream slope was generally vegetated with grass that appeared to be regularly mowed.

2.1.3 Primary Ash Pond Crest (Photos 20 through 23)

The impoundment crest had a gravel cover over much of the impoundment, with some grasses on the western, northern and eastern embankments. The crest on the southern embankment consisted of grassy areas and areas of reclaimed ash stockpiles. The alignment of the impoundment crest appeared generally level, with no depressions or irregularities observed. Based on topographic information provided by CGS, the crest elevation ranged from elevation 802 feet to elevation 812 feet MSL. No significant settlement was observed at the time of our inspection.

2.1.4 Primary Ash Pond Downstream Slope (Photos 24 through 37)

The impoundment is incised along the western and southern embankments. An embankment separates the PAP from the SAP such that the eastern embankment downstream slope of the PAP is the same as the western embankment upstream slope of the SAP. During our Site visit, the floodwaters of the Wisconsin River were backed up into Duck Creek and covered the downstream toe and part of the northern embankment as shown in Photos 24 through 26. The downstream slope of the northern embankment of the impoundment was generally in good condition. The northern embankment was vegetated with grass that appeared to be regularly mowed and trees had recently been removed from the northern embankment as shown in Photo 27. There was minor wave action erosion over much of the eastern embankment downstream slope as shown in Photos 31 and 32. A large ditch that appeared to be formed by stormwater erosion was noted on the downstream slope near the southeast corner of the PAP. The eroded ditch was approximately 10 feet wide, 6 feet to 8 feet deep, and 50 feet long and is shown in Photos 34 and 35.



2.1.5 Primary Ash Pond Impoundment Pump House and Ash Discharge Pipes (Photos 85 through 88)

The pump house and ash discharge pipes were generally in good condition. There were no leaks observed in the discharge pipes and the pump house generally appeared to be in good repair. There were no observed defects or areas of these structures that required repair.

2.1.6 Secondary Ash Pond Impoundment General Findings

In general, the SAP was found to be in **SATISFACTORY** condition. The specific concerns and minor deficiencies observed are identified in more detail in the sections below. An overall Site plan showing the impoundments is provided as **Figure 2**. A Site plan showing key features of the SAP, including deficiencies observed during the current inspection, is provided as **Figure 3**. The location and orientation of photographs provided in **Appendix D** is shown on the Photo Plan in **Figure 3**.

2.1.7 Secondary Ash Pond Impoundment Upstream Slope (Photos 30 through 45)

The SAP water elevation at the time of inspection was approximately at an elevation of 790 feet MSL¹⁵. Therefore, the lower portion of the upstream slope was underwater or covered by ash deltas and not visible. No rip rap was present on the upstream slope and there was minor wave action erosion of the upstream slope at the historic pond water elevation (approximately 796 feet MSL) throughout much of the impoundment. An example of the observed erosion is shown in Photo 31. The upstream slope was generally vegetated with grass that appeared to be regularly mowed.

The western embankment of the SAP separates the SAP from the PAP. Please refer to Section 2.1.4 for discussion of the erosion features noted on the upstream slope of western SAP embankment which corresponds to the downstream slope of eastern PAP embankment.

2.1.8 Secondary Ash Pond Crest (Photos 45 through 50)

The impoundment crest generally had a gravel cover, with some grasses on the western, northern and eastern embankments. The impoundment crest on the southern embankment consisted of grassy areas and areas of reclaimed ash stockpiles. The alignment of the impoundment crest appeared generally level, with no depressions or irregularities observed. Based on topographic information provided by CGS, the crest elevation ranged from an elevation of 802 feet to an elevation of 808 feet MSL. No significant settlement was observed at the time of our inspection.

2.1.9 Secondary Ash Pond Downstream Slope (Photos 14, 15, 20, 93, 94, 95)

The impoundment is incised along the southern and eastern embankments. During our Site Visit, the floodwaters of the Wisconsin River were backed up into Duck Creek and covered the downstream toe along the northern embankment as shown in Photos 93 and 95. The downstream slope of the northern embankment of the impoundment was generally in good condition. The embankments were generally vegetated with grass that appeared to be regularly mowed.

¹⁵ Pond elevation visually estimated by GZA during inspection.



The western embankment of the SAP separates the SAP from the PAP. Please refer to Section 2.1.2 for discussion of the downstream slope of western SAP embankment which corresponds to the upstream slope of eastern PAP embankment.

2.1.10 Secondary Ash Pond Impoundment Pump House and Discharge Pipes (Photos 89 through 92)

The exterior of the pump house located in the southeast corner of the impoundment was generally in good condition. GZA did not inspect the interior of the pump house. The discharge pipe that would be used to transfer water from the SAP to the PP were generally in good condition. There were no observed defects or areas of these structures that required repair.

2.1.11 Polishing Pond Impoundment General Findings

In general, the PP was found to be in **SATISFACTORY** condition. The specific concerns and minor deficiencies observed are identified in more detail in the sections below. An overall Site plan showing the impoundments is provided as **Figure 2**. A Site plan showing key features of the PP, including deficiencies observed during the current inspection, is provided as **Figure 4**. The location and orientation of photographs provided in **Appendix D** is shown on the Photo Plan in **Figure 4**.

2.1.12 Polishing Pond Impoundment Upstream Slope (Photos 51 through 55)

There was no water present in the PP at the time of our inspection and no rip rap was present on the upstream slope. The upstream slope was generally vegetated with grass that did not appear to be regularly mowed. There is a primary discharge pipe that was used to transfer water from the SAP located on the northern portion of the impoundment. A secondary discharge pipe enters the PP on the eastern portion of the impoundment.

2.1.13 Polishing Pond Crest (Photos 56 through 60)

There is a gravel access road on the eastern portion of the impoundment crest, grass vegetation on the northern and southern portion of the impoundment crest, and a gravel surface cover on the western portion of the impoundment crest. The discharge spillways are located on the southern portion of the impoundment crest. The alignment of the top of the impoundment appeared generally level, with no depressions or irregularities observed. Based on topographic information provided by CGS, the top of impoundment elevation is approximately 805 feet MSL. No significant settlement was observed at the time of our inspection.

2.1.14 Polishing Pond Impoundment Spillways (Photos 61 through 63)

When the PP was in use prior to 2004, the water levels in the pond were maintained by the spillway located on the southern portion of the impoundment. An emergency spillway is also present on the southern portion of the impoundment east of the primary spillway as shown on **Figure 4**.

The primary spillway is a concrete structure that is 12 inches wide and 36 inches tall at the narrowest point beneath the equipment shed. The invert elevation of the primary spillway is



approximately 802 feet MSL¹⁶. The approach apron for the primary spillway is approximately 68 inches wide and 17 feet long and tapers to 12 inches wide beneath the equipment building. The discharge apron (shown in Photo 62) expands to approximately 66 inches wide and extends 20.5 feet before emptying into the drainage ditch (shown in Photo 63) that extends south from the spillway. The primary spillway appeared to be in good condition with no major cracks or structural defects at the time of our inspection.

A small equipment building that has been empty since 2004 is located above the primary spillway. When the PP was actively used, water quality and levels were monitored from instrumentation in the equipment building. The instrumentation has since been removed.

An emergency spillway (shown in Photo 61) is located about 15 feet east of the primary spillway. The emergency spillway is a concrete structure that is approximately 36 inches wide and 24 inches tall. The spillway is approximately 28 feet long and empties in the drainage ditch south the spillway. The invert elevation of the emergency spillway is approximately 803 feet MSL. The emergency spillway appeared to be in good condition with no major cracks or structural defects at the time of our inspection.

2.1.15 Landfill Storm Water Pond Impoundment General Findings

In general, the LSP was found to be in **FAIR** condition. The specific concerns and minor deficiencies observed are identified in more detail in the sections below. An overall Site plan showing the impoundments is provided as **Figure 2**. A Site plan showing key features of the LSP, including deficiencies observed during the current inspection, is provided as **Figure 5**. The location and orientation of photographs provided in **Appendix D** is shown on the Photo Plan in **Figure 5**.

2.1.16 Landfill Storm Water Pond Impoundment Upstream Slope (Photos 64 through 74, 83)

The LSP pond water surface at the time of inspection was at an elevation of 796 feet MSL based on information provided by CGS. Therefore, the lower portion of the upstream slope was underwater and not visible. No rip rap was present on the upstream slope. A 24-inch diameter corrugated metal pipe discharges storm water into the impoundment along the western embankment. The metal stake that is used to mark the water levels in the impoundment is located in the southwest corner and is shown in Photo 83.

There were trees as large as 15 inches in diameter present on the southern, eastern and northern upstream slopes. Animal burrows were present on the southern and northern upstream slopes. There were two erosion ditches located along the eastern upstream slope. One erosion ditch was approximately centered in the north-south direction along the eastern embankment and was approximately 6 inches wide, 6 inches deep and 50 feet long. Another erosion ditch was located in the northeast corner of the impoundment and was approximately 6 inches to 18 inches deep, 6 inches to 12 inches wide and 100 feet long. Vegetation on the western embankment was sparse and minor erosional features were present. The upstream slope was generally vegetated with grass that did not appear to be regularly mowed and was sparse in select areas.

¹⁶ Invert elevations for primary and emergency spillway were estimated by GZA based on visual observations and measurements taken during the inspection.



2.1.17 Landfill Storm Water Pond Crest (Photos 75 through 82, 84)

The crest of the LSP was vegetated with grass that had not been mowed on the northern, eastern and southern portions of the impoundment, and a gravel service road is present on the crest of the western portion of the impoundment. Trees up to 15 inches in diameter were present on the impoundment crest. The alignment of the impoundment crest appeared generally level, with no depressions or irregularities observed. Based on topographic information provided by CGS, the impoundment crest elevation varies from approximately elevation 803 feet MSL to approximately elevation 830 feet MSL. No significant settlement was observed at the time of our inspection.

2.2 Caretaker Interview

Maintenance of the impoundments is the responsibility of CGS personnel. GZA met with CGS personnel and discussed the operations and maintenance procedures, regulatory requirements, and the history of the impoundments since their construction.

2.3 Operation and Maintenance Procedures

As discussed in Section 1.2.8, CGS personnel are responsible for the regular operations and maintenance of the impoundment. Routine maintenance procedures include mowing of the PAP and SAP, periodic removal of deep-rooted vegetation from the PAP and SAP embankments and removal of water from the LSP as needed. Routine operations of the impoundments include measurement of the PAP water levels five days a week, routine recovery of ash settled in the PAP, periodic observation of the PAP, SAP, and LSP, and semi-annual inspection of the PAP and SAP.

2.4 Emergency Action Plan

No Emergency Action Plan (EAP) has been developed for CGS with regards to potential or actual failure of the ash impoundments.

2.5 Hydrologic/Hydraulic Data

The results of an analysis for the LSP were provided to GZA. The analysis indicated the maximum allowable water level in the LSP is elevation 794.85 MSL feet to allow sufficient free-board to accommodate the 25 year, 24-hour storm event based on current operating conditions.

After the drafting of the DRAFT report, a hydraulic/hydrologic analysis of the impoundments was conducted by Aether DBS. A copy of the report was reviewed by GZA prior to completion of the final report. Aether DBS analyzed the PAP and SAP based on a 100 year, 24 hour storm event and concluded the impoundments were adequately designed based on a normal pond operating level of elevation 798 feet MSL. The WDNR requires significant hazard dams be designed with adequate spillway capacity to accommodate the 500 year flood event.

The hydrologic/hydraulic analysis of the PP conducted by Aether DBS did not evaluate the normal operating conditions and only evaluated the observed conditions. GZA did not perform an independent assessment of the hydraulics and hydrology for the impoundments as this was beyond our scope of services.



2.6 Structural and Seepage Stability

No engineering design information was available for PP or LSP.

After preparation of the DRAFT report, a structural and seepage analysis was conducted of the PAP and SAP by Aether DBS. A copy of the report was reviewed by GZA prior to completion of the final report. Based on the analysis conducted by Aether DBS, the calculated factor of safety was 1.77, 1.09, and 1.45 during normal loading conditions, earthquake loading, and rapid drawdown, respectively. The Aether DBS analysis was based on assumed soil conditions. No construction documentation reports or confirmatory soil borings were utilized to define the in-situ soil characteristics of the impoundment embankments.

3.0 ASSESSMENTS AND RECOMMENDATIONS

3.1 Assessments

In general, the overall condition of the PAP was judged to be **SATISFACTORY**. The impoundment was found to have the following deficiencies:

1. Minor erosion due to wave action along the upstream slope;
2. Minor erosion due to wave action along the downstream slope of the eastern embankment that also forms the upstream embankment of the SAP;
3. Large erosion ditch on the downstream slope near the southeast corner of the impoundment; and,
4. Tree stumps and roots on the downstream slope near the northwest corner of the embankment.

In general, the overall condition of SAP was judged to be **SATISFACTORY**. The impoundment was found to have the following deficiencies:

1. Minor erosion due to wave action along the upstream slope;
2. Minor erosion due to wave action along the upstream slope of the western embankment that also forms the downstream embankment of the PAP; and,
3. Large erosion ditch on the upstream slope near the southwest corner of the impoundment (same erosion ditch noted in Item 3 for the PAP).

In general, the overall condition of PP was judged to be **SATISFACTORY**. The impoundment was found to have the following deficiencies:

1. No routine maintenance plan.

In general, the overall condition of LSP was judged to be **FAIR**. The impoundment was found to have the following deficiencies:

1. Erosion ditches on the eastern and western embankment;
2. Sparse vegetation in select areas of the upstream slope;
3. Trees up to 15 inches in diameter located on the upstream slope and crest;
4. Animal burrows on the northern and southern embankments; and,
5. Water level above the maximum allowable level of 794.85 feet.



The following recommendations and remedial measures generally describe the recommended approach to address current deficiencies at the impoundments. Prior to undertaking recommended maintenance, repairs, or remedial measures, the applicability of environmental permits needs to be determined for activities that may occur within resource areas under the jurisdiction of the appropriate regulatory agencies.

3.2 Studies and Analyses

GZA recommends the following studies and analyses:

1. Evaluate the extent of wave action erosion on the upstream slopes of the PAP;
2. Perform a hydrologic/hydraulic analysis of the PP to determine the adequacy of the current and designed operating conditions and design to accommodate the appropriate precipitation event;
3. Evaluate the slope and seepage stability of the LSP based on current operating conditions and methodologies;
4. Confirm the soil and seepage parameters assumed in stability analysis of the PAP and SAP; and,
5. Develop an EAP for the impoundments.

3.3 Recurrent Operation & Maintenance Recommendations

GZA recommends the following operation and maintenance level activities:

1. Documentation of the periodic visual observations of the PAP, SAP and LSP;
2. Maintain copies of the impoundment design and construction documentation on Site.
2. Semi-annual inspection of the PP and LSP in addition to the inspections being completed on the PAP and SAP;
3. Clear deep rooted vegetation stumps from the PAP embankment;
4. Clear deep rooted vegetation from the embankments and crest of the LSP;
5. Add topsoil and reseed areas of sparse vegetation in the LSP; and,
6. Remove excess water from LSP and relocate marker stake to accommodate current maximum water level of 794.85 feet.

3.4 Repair Recommendations

GZA recommends the following minor repairs which may improve the overall condition of the impoundment, but do not alter the current design. The recommendations may require design by a professional engineer and construction contractor experienced in impoundment construction.

1. Repair erosion ditches present in the PAP, SAP and LSP.

3.5 Alternatives

There are no practical alternatives to the repairs itemized above.

4.0 ENGINEER'S CERTIFICATION



I acknowledge that the management unit referenced herein, the CGS Primary Ash Pond, Secondary Ash Pond and Polishing Pond Impoundments have been assessed to be in **SATISFACTORY** condition and the Landfill Storm Water Pond Impoundment has been assessed to be in **FAIR** condition on September 28, 2010.

A handwritten signature in blue ink, appearing to read 'Patrick J. Harrison'.

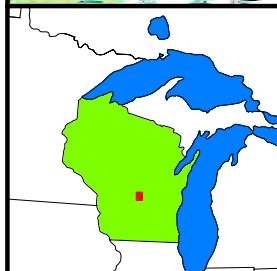
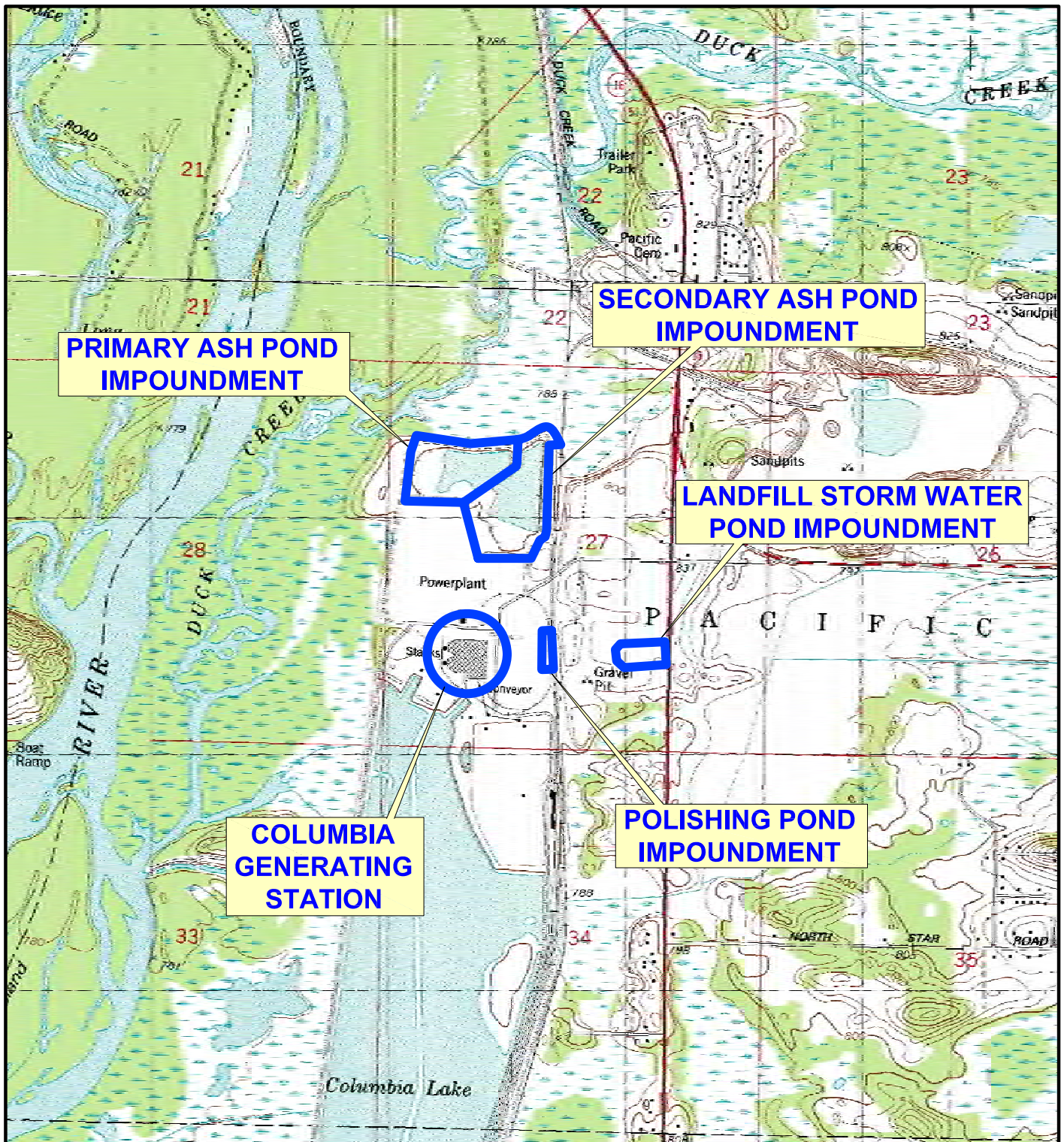
Patrick J. Harrison, P.E.
Senior Engineering Consultant

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Figures

GZA-1;GZA_USA#01.0170142.2 Ash ImpoundmentsColumbia, WI\DRAWINGS\AutoCAD\MATCHED - SITE LOCATION.dwg [FIGURE 1 - SITE LOCATION (5)] November 08, 2010 - 2:04pm justin.hegarty



SOURCE:
USGS TOPOGRAPHIC QUADRANGLE MAPS:
POYNETTE, WI. (1984)
PORTAGE, WI. (1984)

Data Supplied by:



0 1,000' 2,000' 4,000'



PROJ. MGR.: DPS
DESIGNED BY: DPS
REVIEWED BY: DPS
OPERATOR: JAH

DATE: 10-25-2010

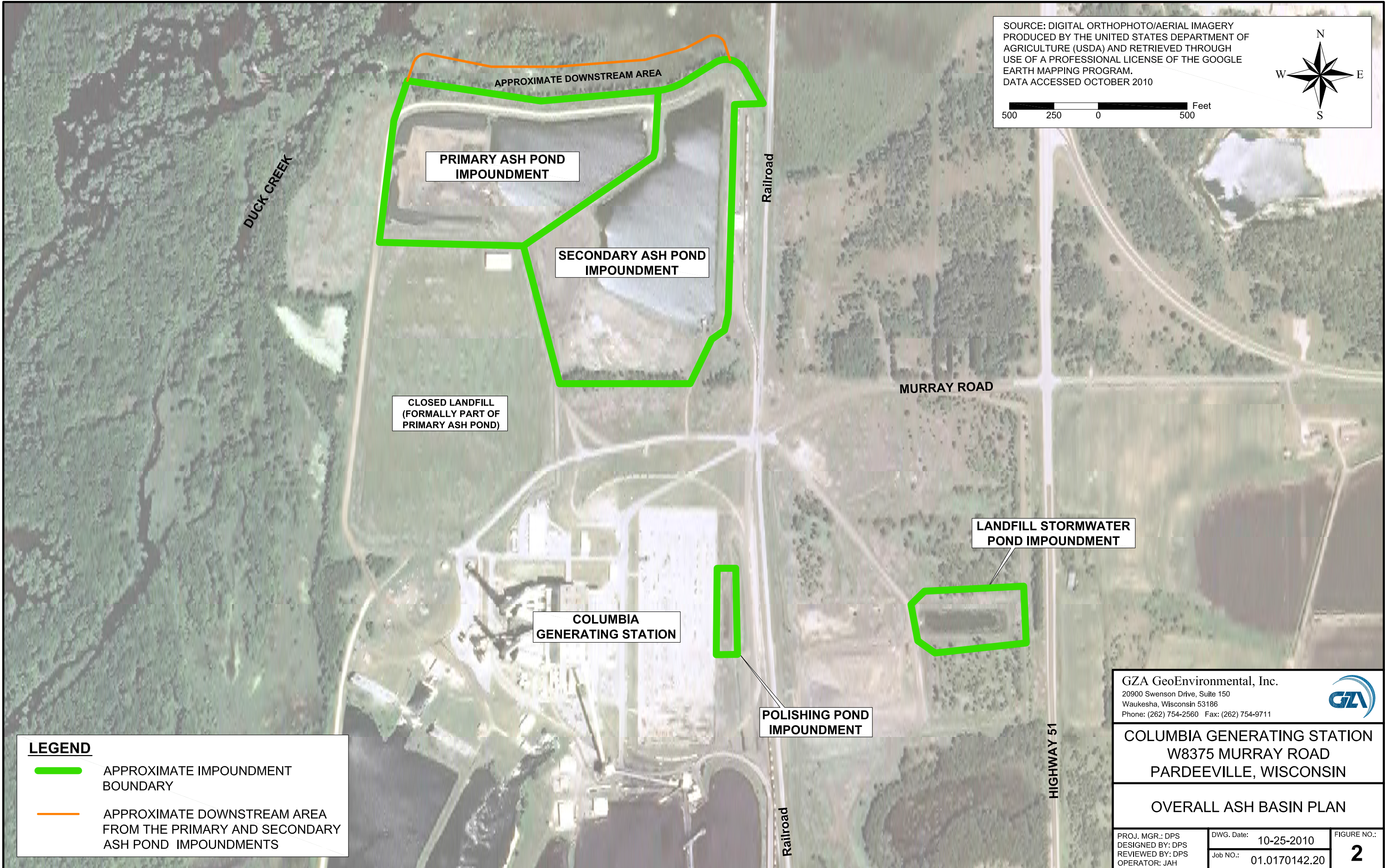
LOCUS PLAN
(USGS 7.5-MINUTE TOPOGRAPHIC QUAD)

COLUMBIA GENERATING STATION
PARDEEVILLE, WISCONSIN

FIGURE NO.
01.0170142.20

FIGURE NO.
1

GZA-J:\GZA_USA\01.0170142.2 Ash Impoundments\Columbia, WI\DRAWINGS\AutoCAD\MATCHED - SITE PLANS.dwg [LARGE] June 15, 2011 - 7:58am justin.hegarty



LEGEND

- APPROXIMATE IMPOUNDMENT BOUNDARY
- APPROXIMATE DOWNSTREAM AREA FROM THE PRIMARY AND SECONDARY ASH POND IMPOUNDMENTS

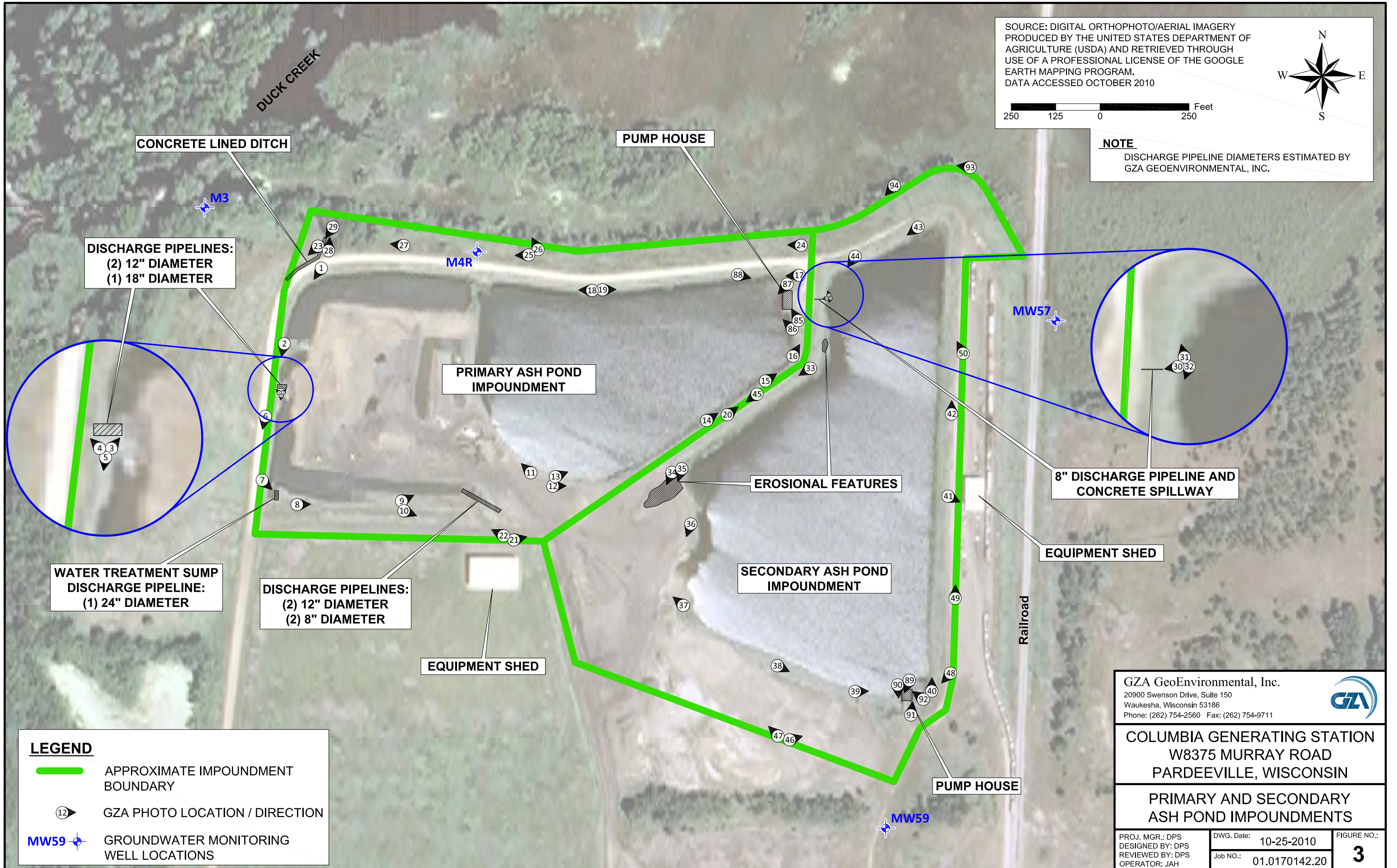
SOURCE: DIGITAL ORTHOPHOTO/AERIAL IMAGERY
PRODUCED BY THE UNITED STATES DEPARTMENT OF
AGRICULTURE (USDA) AND RETRIEVED THROUGH
USE OF A PROFESSIONAL LICENSE OF THE GOOGLE
EARTH MAPPING PROGRAM.
DATA ACCESSED OCTOBER 2010

500 250 0 500 Feet

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| | | |
|--|---|-------------------------|
| GZA GeoEnvironmental, Inc. 20900 Swenson Drive, Suite 150 Waukesha, Wisconsin 53186 Phone: (262) 754-2560 Fax: (262) 754-9711 | | |
| COLUMBIA GENERATING STATION W8375 MURRAY ROAD PARDEEVILLE, WISCONSIN | | |
| OVERALL ASH BASIN PLAN | | |
| PROJ. MGR.: DPS DESIGNED BY: DPS REVIEWED BY: DPS OPERATOR: JAH | DWG. Date: 10-25-2010 Job NO.: 01.0170142.20 | FIGURE NO.: 2 |

GZA-J:\GZA_USA\01.0170142.2 Ash Impoundments\Columbia, WI\DRAWINGS\AutoCAD\MATCHED - SITE PLANS.dwg [1ST & 2ND ASH] June 15, 2011 - 8:00am justin.hegarty



GZA GeoEnvironmental, Inc.

20900 Swenson Drive, Suite 150
Waukesha, Wisconsin 53186
Phone: (262) 754-2560 Fax: (262) 754-9711



COLUMBIA GENERATING STATION
W8375 MURRAY ROAD
PARDEEVILLE, WISCONSIN

**PRIMARY AND SECONDARY
ASH POND IMPOUNDMENTS**

PROJ. MGR.: DPS
DESIGNED BY: DPS
REVIEWED BY: DPS
OPERATOR: JAH

DWG. Date: 10-25-2010
Job NO.: 01.0170142.20

FIGURE NO.:
3

GZA-J:\GZA_USA\01.0170142.2 Ash Impoundments\Columbia, WI\DRAWINGS\AutoCAD\MATCHED - SITE PLANS.dwg [POLISH] November 08, 2010 - 2:01pm justin.hegarty

COLUMBIA
GENERATING STATION

LEGEND

APPROXIMATE IMPOUNDMENT
BOUNDARY

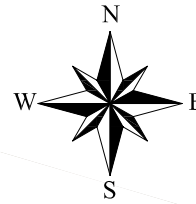
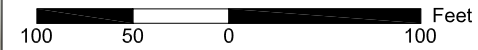
12

GZA PHOTO LOCATION / DIRECTION

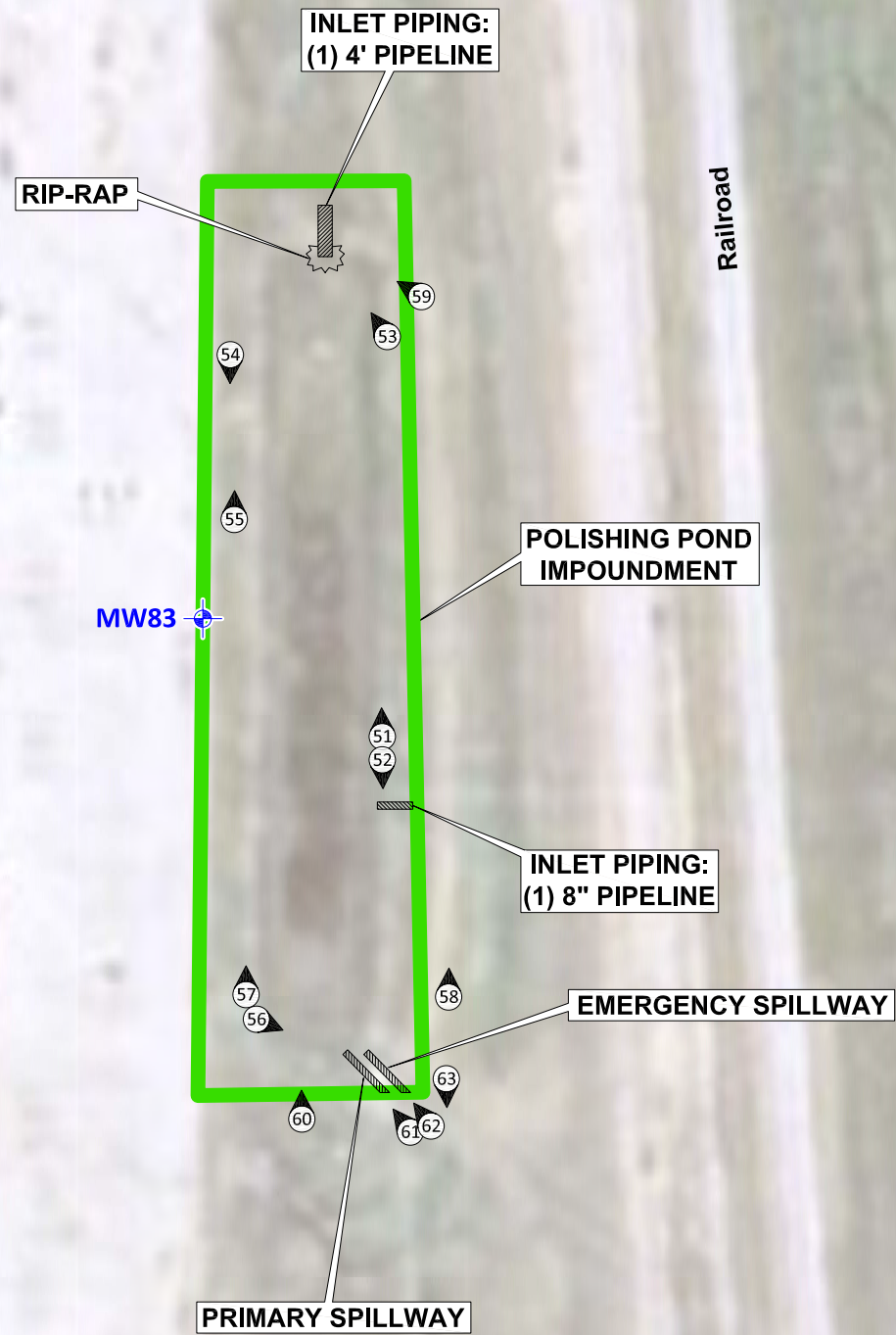
MW83

GROUNDWATER MONITORING
WELL LOCATION

SOURCE: DIGITAL ORTHOPHOTO/AERIAL IMAGERY
PRODUCED BY THE UNITED STATES DEPARTMENT OF
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EARTH MAPPING PROGRAM.
DATA ACCESSED OCTOBER 2010



NOTE
DISCHARGE PIPELINE DIAMETERS ESTIMATED BY
GZA GEOENVIRONMENTAL, INC.



IN
ALLO

GZA GeoEnvironmental, Inc.
20900 Swenson Drive, Suite 150
Waukesha, Wisconsin 53186
Phone: (262) 754-2560 Fax: (262) 754-9711

COLUMBIA GENERATING STATION
W8375 MURRAY ROAD
PARDEEVILLE, WISCONSIN

POLISHING POND IMPOUNDMENT

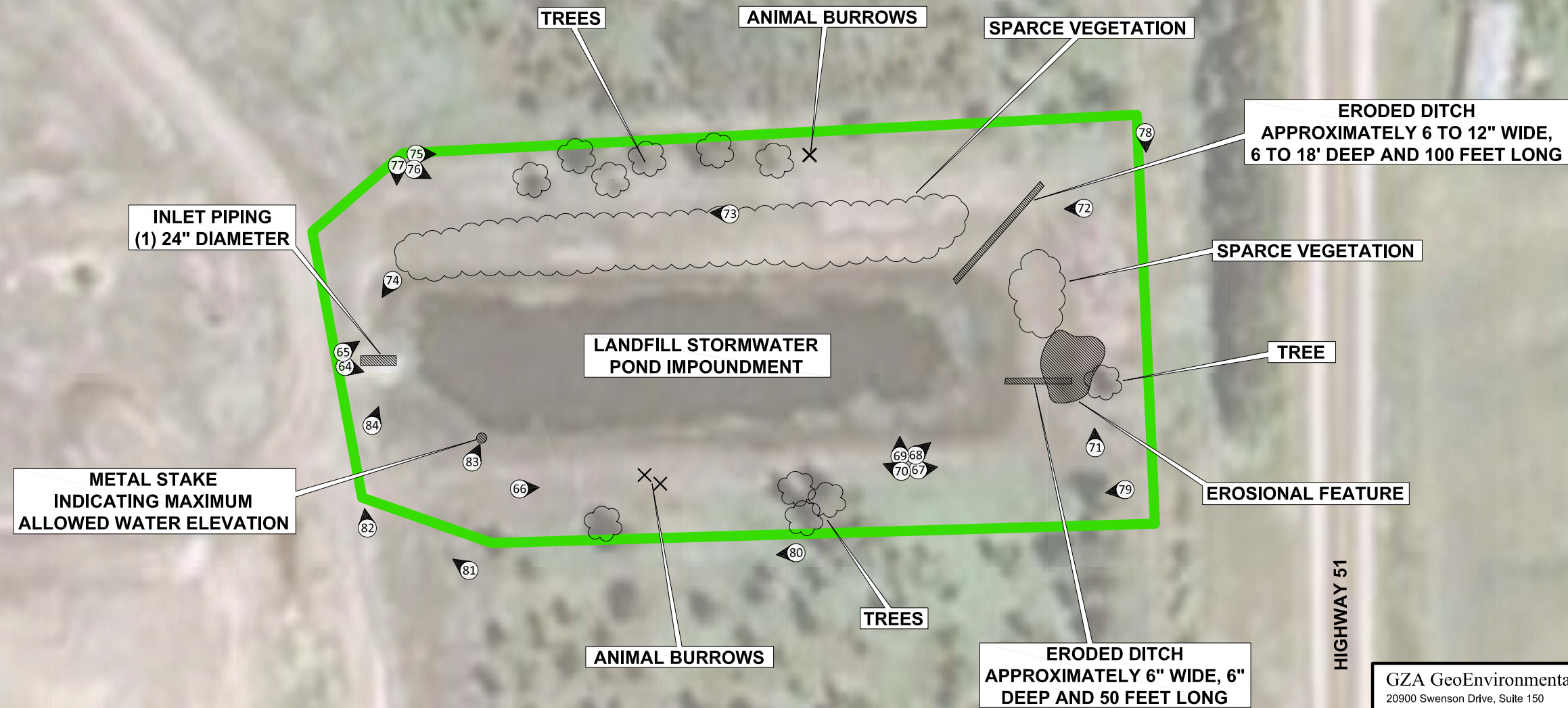
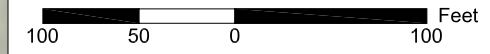
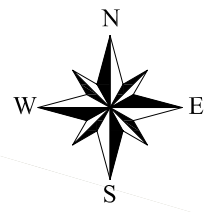
PROJ. MGR.: DPS
DESIGNED BY: DPS
REVIEWED BY: DPS
OPERATOR: JAH

DWG. Date: 10-25-2010
Job NO.: 01.0170142.20

FIGURE NO.:
4

GZA-J:\GZA_USA\01.0170142.2 Ash Impoundments\Columbia, WI\Drawings\AutoCAD\MATCHED - SITE PLANS.dwg [STORM] November 08, 2010 - 2:02pm justin.hegarty

SOURCE: DIGITAL ORTHOPHOTO/AERIAL IMAGERY
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DATA ACCESSED OCTOBER 2010



LEGEND

- APPROXIMATE IMPOUNDMENT BOUNDARY
- GZA PHOTO LOCATION / DIRECTION

HIGHWAY 51

| | | |
|--|---|-------------------------|
| GZA GeoEnvironmental, Inc. 20900 Swenson Drive, Suite 150 Waukesha, Wisconsin 53186 Phone: (262) 754-2560 Fax: (262) 754-9711 | | |
| COLUMBIA GENERATING STATION W8375 MURRAY ROAD PARDEEVILLE, WISCONSIN | | |
| LANDFILL STORMWATER POND IMPOUNDMENT | | |
| PROJ. MGR.: DPS DESIGNED BY: DPS REVIEWED BY: DPS OPERATOR: JAH | DWG. Date: 10-25-2010 Job NO.: 01.0170142.20 | FIGURE NO.: 5 |



Appendix A

Limitations

DAM ENGINEERING & VISUAL INSPECTION LIMITATIONS

1. The observations described in this report were made under the conditions stated herein. The conclusions presented in the report were based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of described services.
2. In preparing this report, GZA GeoEnvironmental, Inc. (GZA) has relied on certain information provided by Alliant Energy (and their affiliates) as well as Federal, state, and local officials and other parties referenced therein. GZA has also relied on other parties which were available to GZA at the time of the inspection. Although there may have been some degree of overlap in the information provided by these various sources, GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this work.
3. In reviewing this Report, it should be noted that the reported condition of the dam is based on observations of field conditions during the course of this study along with data made available to GZA. The observations of conditions at the dam reflect only the situation present at the specific moment in time the observations were made, under the specific conditions present. It may be necessary to reevaluate the recommendations of this report when subsequent phases of evaluation or repair and improvement provide more data.
4. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions may be detected.
5. Water level readings have been reviewed and interpretations have been made in the text of this report. Fluctuations in the level of the groundwater and surface water may occur due to variations in rainfall, temperature, and other factors different than at the time measurements were made.
6. GZA's comments on the hydrology, hydraulics, and embankment stability for the dam are based on a limited review of available design documentation available from Alliant Energy and the Wisconsin Department of Natural Resources. Calculations and computer modeling used in these analyses were not available and were not independently reviewed by GZA.
7. This report has been prepared for the exclusive use of US EPA for specific application to the existing dam facilities, in accordance with generally accepted dam engineering practices. No other warranty, express or implied, is made.
8. This dam inspection verification report has been prepared for this project by GZA. This report is for broad evaluation and management purposes only and is not sufficient, in and of itself, to prepare construction documents or an accurate bid.



Appendix B

Definitions

COMMON DAM SAFETY DEFINITIONS

For a comprehensive list of dam engineering terminology and definitions refer to references published by the U.S. Army Corps of Engineers, the Federal Energy Regulatory Commission, the Department of the Interior Bureau of Reclamation, or the Federal Emergency Management Agency.

Orientation

Upstream – Shall mean the side of the dam that borders the impoundment.

Downstream – Shall mean the high side of the dam, the side opposite the upstream side.

Right – Shall mean the area to the right when looking in the downstream direction.

Left – Shall mean the area to the left when looking in the downstream direction.

Dam Components

Dam – Shall mean any artificial barrier, including appurtenant works, which impounds or diverts water.

Embankment – Shall mean the fill material, usually earth or rock, placed with sloping sides, such that it forms a permanent barrier that impounds water.

Crest – Shall mean the top of the dam, usually provides a road or path across the dam.

Abutment – Shall mean that part of a valley side against which a dam is constructed. An artificial abutment is sometimes constructed as a concrete gravity section, to take the thrust of an arch dam where there is no suitable natural abutment.

Appurtenant Works – Shall mean structures, either in dams or separate there from, including but not be limited to, spillways; reservoirs and their rims; low level outlet works; and water conduits including tunnels, pipelines, or penstocks, either through the dams or their abutments.

Spillway – Shall mean a structure over or through which water flows are discharged. If the flow is controlled by gates or boards, it is a controlled spillway; if the fixed elevation of the spillway crest controls the level of the impoundment, it is an uncontrolled spillway.

General

EAP – Emergency Action Plan - Shall mean a predetermined plan of action to be taken to reduce the potential for property damage and/or loss of life in an area affected by an impending dam break.

O&M Manual – Operations and Maintenance Manual; Document identifying routine maintenance and operational procedures under normal and storm conditions.

Normal Pool – Shall mean the elevation of the impoundment during normal operating conditions.

Acre-foot – Shall mean a unit of volumetric measure that would cover one acre to a depth of one foot. It is equal to 43,560 cubic feet. One million U.S. gallons = 3.068 acre feet.

Height of Dam – Shall mean the vertical distance from the lowest portion of the natural ground, including any stream channel, along the downstream toe of the dam to the crest of the dam.

Spillway Design Flood (SDF) – Shall mean the flood used in the design of a dam and its appurtenant works particularly for sizing the spillway and outlet works, and for determining maximum temporary storage and height of dam requirements.

Condition Rating

SATISFACTORY - No existing or potential management unit safety deficiencies are recognized. Acceptable performance is expected under all applicable loading conditions (static, hydrologic, seismic) in accordance with the applicable criteria. Minor maintenance items may be required.

FAIR - Acceptable performance is expected under all required loading conditions (static, hydrologic, seismic) in accordance with the applicable safety regulatory criteria. Minor deficiencies may exist that require remedial action and/or secondary studies or investigations.

POOR - A management unit safety deficiency is recognized for any required loading condition (static, hydrologic, seismic) in accordance with the applicable dam safety regulatory criteria. Remedial action is necessary. POOR also applies when further critical studies or investigations are needed to identify any potential dam safety deficiencies.

UNSATISFACTORY - Considered unsafe. A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution. Reservoir restrictions may be necessary.

Hazard Potential

(In the event the impoundment should fail, the following would occur):

LESS THAN LOW HAZARD POTENTIAL: Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

LOW HAZARD POTENTIAL: Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

SIGNIFICANT HAZARD POTENTIAL: Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

HIGH HAZARD POTENTIAL: Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.



Appendix C

Inspection Checklists



| | | | |
|--|--|------------------|-------------------------|
| Site Name: | Columbia Generating Station | Date: | September 28, 2010 |
| Unit Name: | Primary Ash Pond | Operator's Name: | Wisconsin Power & Light |
| Unit I.D.: | Hazard Potential Classification: High Significant Low | | |
| Inspector's Name: Doug Simon, P.E. & Patrick J. Harrison, P.E. | | | |

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

| | Yes | No | | Yes | No |
|--|-------------|----|---|-----|----|
| 1. Frequency of Company's Dam Inspections? | Semi-Annual | | 18. Sloughing or bulging on slopes? | | ✓ |
| 2. Pool elevation (operator records)? | 796.0 | | 19. Major erosion or slope deterioration? | | ✓ |
| 3. Decant inlet elevation (operator records)? | N/A | | 20. Decant Pipes: | | |
| 4. Open channel spillway elevation (operator records)? | N/A | | Is water entering inlet, but not exiting outlet? | N | A |
| 5. Lowest dam crest elevation (operator records)? | 805.0 | | Is water exiting outlet, but not entering inlet? | N | A |
| 6. If instrumentation is present, are readings recorded (operator records)? | ✓ | | Is water exiting outlet flowing clear? | N | A |
| 7. Is the embankment currently under construction? | | ✓ | 21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below): | | |
| 8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)? | ✓ | | From underdrain? | N | A |
| 9. Trees growing on embankment? (If so, indicate largest diameter below) | | ✓ | At isolated points on embankment slopes? | | ✓ |
| 10. Cracks or scarps on crest? | | ✓ | At natural hillside in the embankment area? | | ✓ |
| 11. Is there significant settlement along the crest? | | ✓ | Over widespread areas? | | ✓ |
| 12. Are decant trashracks clear and in place? | N/A | | From downstream foundation area? | | ✓ |
| 13. Depressions or sinkholes in tailings surface or whirlpool in the pool area? | | ✓ | "Boils" beneath stream or ponded water? | | ✓ |
| 14. Clogged spillways, groin or diversion ditches? | | ✓ | Around the outside of the decant pipe? | | ✓ |
| 15. Are spillway or ditch linings deteriorated? | | ✓ | 22. Surface movements in valley bottom or on hillside? | | ✓ |
| 16. Are outlets of decant or underdrains blocked? | N/A | | 23. Water against downstream toe? | ✓ | |
| 17. Cracks or scarps on slopes? | | ✓ | 24. Were Photos taken during the dam inspection? | ✓ | |

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #

Comments

- 1) Inspections completed by plant personnel on a semi-annual basis.
- 5) Elevation based on construction drawings.
- 6) Groundwater levels are measured semi-annually. Impoundment levels are measured daily.
- 9) Trees up to 12" in diameter were recently removed. Stumps are still present.
- 19) Beaching of upstream slope at impoundment water elevation.
- 23) Backwaters of Wisconsin River abut the toe of downstream embankment during high-water events.

**Coal Combustion Waste (CCW)
Impoundment Inspection**Impoundment NPDES Permit # WI0002780INSPECTOR Doug Simon, P.E.
Patrick J. Harrison, P.E.Date 9/28/10Impoundment Name Primary Ash PondImpoundment Company Wisconsin Power & LightEPA Region Region VState Agency (Field Office) Addresss WDNR - 2514 Morse Street
Janesville, WI 53545Name of Impoundment Primary Ash Pond(Report each impoundment on a separate form under the same Impoundment NPDES
Permit number)New _____ Update x

Is impoundment currently under construction?

Yes

No

_____ xIs water or ccw currently being pumped into
the impoundment?x _____**IMPOUNDMENT FUNCTION:** Settling of Ash, Decanting WaterNearest Downstream Town : Name Poynette, WIDistance from the impoundment 10 miles

Impoundment

Location: Longitude 43 Degrees 29 Minutes 35 SecondsLatitude 89 Degrees 25 Minutes 10 SecondsState WI County ColumbiaDoes a state agency regulate this impoundment? YES x NO _____If So Which State Agency? Wisconsin Department of Natural Resources, Solid Waste Division

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

 LESS THAN LOW HAZARD POTENTIAL: Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ LOW HAZARD POTENTIAL: Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

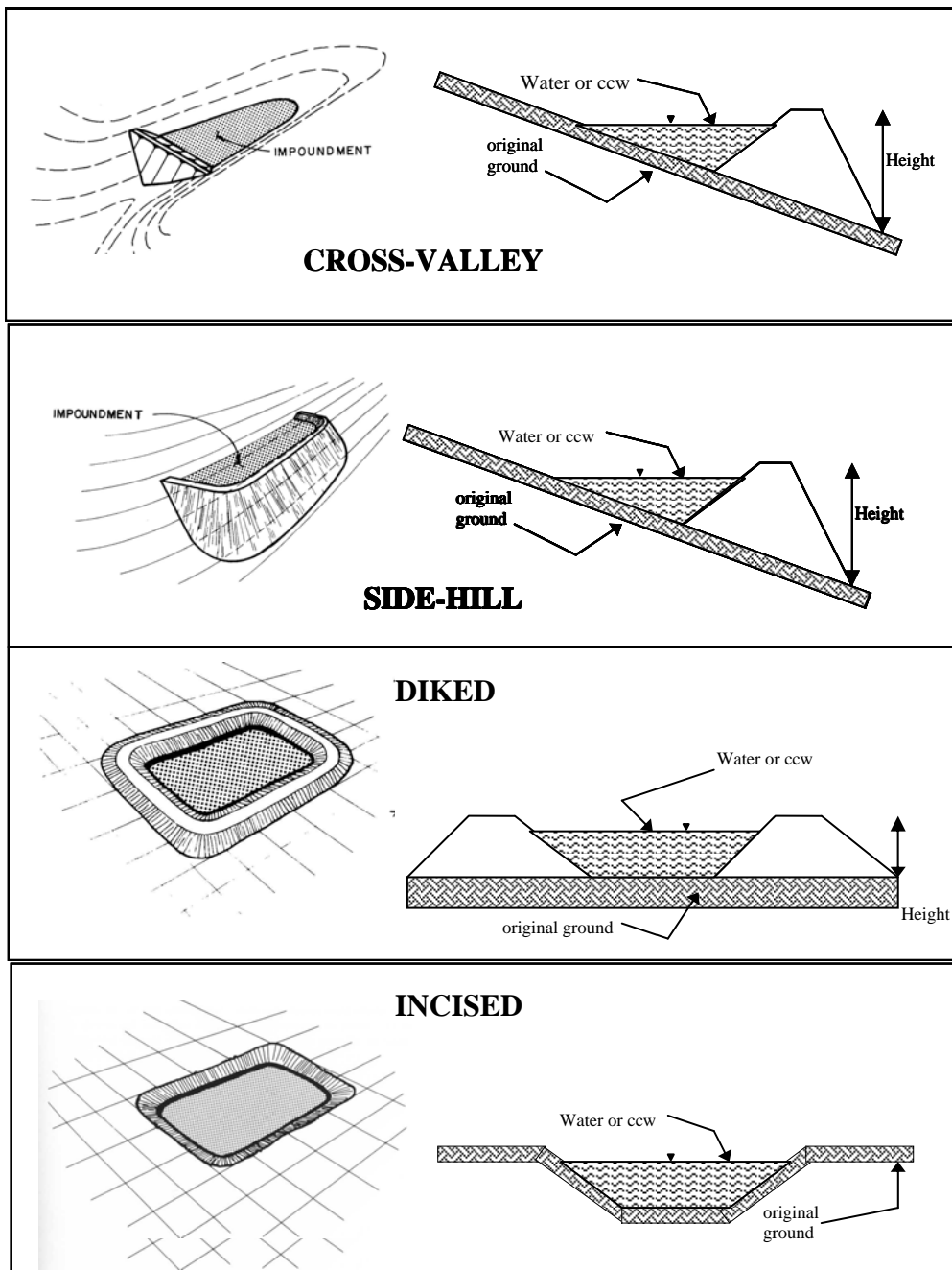
x **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

Failure or mis-operation will not likely result in the loss of human life. However,
it may cause significant economic loss, environmental damage and disruption of
lifeline facilities.

CONFIGURATION:



- ☐ Cross-Valley
- ☐ Side-Hill
- ☐ Diked
- ☐ Incised (form completion optional)
- ☒ Combination Incised/Diked

Embankment Height 23 feet

Pool Area 8.5 acres

Current Freeboard 9 feet

Embankment Material Native Sand and Gravel

Liner None Observed or Reported

Liner Permeability NA

TYPE OF OUTLET (Mark all that apply)

_____ **Open Channel Spillway**

_____ Trapezoidal

_____ Triangular

_____ Rectangular

_____ Irregular

_____ depth

_____ bottom (or average) width

_____ top width

_____ **Outlet**

_____ inside diameter

Material

_____ corrugated metal

_____ welded steel

_____ concrete

_____ plastic (hdpe, pvc, etc.)

_____ other (specify) _____

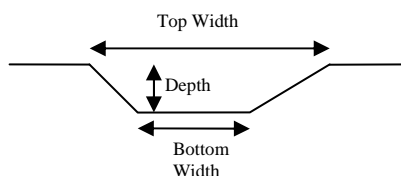
Is water flowing through the outlet? YES _____ NO _____

 x **No Outlet** Water is recycled and returned to plant from pump house.

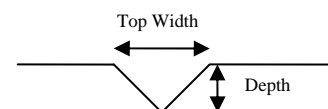
_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By Sargent & Lundy Engineers; Chicago, IL

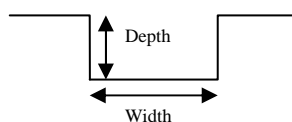
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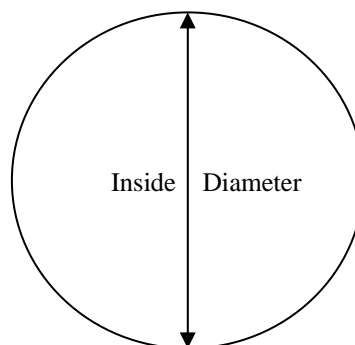
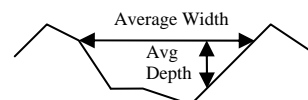
TRIANGULAR



RECTANGULAR



IRREGULAR



US EPA ARCHIVE DOCUMENT

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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

US EPA ARCHIVE DOCUMENT

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YES _____ NO x

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

EPA Form XXXX-XXX, Jan 09



| | | | |
|--|--|------------------|-------------------------|
| Site Name: | Columbia Generating Station | Date: | September 28, 2010 |
| Unit Name: | Secondary Ash Pond | Operator's Name: | Wisconsin Power & Light |
| Unit I.D.: | Hazard Potential Classification: High Significant Low | | |
| Inspector's Name: Doug Simon, P.E. & Patrick J. Harrison, P.E. | | | |

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

| | Yes | No | | Yes | No |
|--|-------------|----|---|-----|----|
| 1. Frequency of Company's Dam Inspections? | Semi-Annual | | 18. Sloughing or bulging on slopes? | ✓ | |
| 2. Pool elevation (operator records)? | 790.0 | | 19. Major erosion or slope deterioration? | | ✓ |
| 3. Decant inlet elevation (operator records)? | N/A | | 20. Decant Pipes: | | |
| 4. Open channel spillway elevation (operator records)? | N/A | | Is water entering inlet, but not exiting outlet? | N | A |
| 5. Lowest dam crest elevation (operator records)? | 805.0 | | Is water exiting outlet, but not entering inlet? | N | A |
| 6. If instrumentation is present, are readings recorded (operator records)? | ✓ | | Is water exiting outlet flowing clear? | N | A |
| 7. Is the embankment currently under construction? | | ✓ | 21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below): | | |
| 8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)? | ✓ | | From underdrain? | N | A |
| 9. Trees growing on embankment? (If so, indicate largest diameter below) | | ✓ | At isolated points on embankment slopes? | | ✓ |
| 10. Cracks or scarps on crest? | | ✓ | At natural hillside in the embankment area? | | ✓ |
| 11. Is there significant settlement along the crest? | | ✓ | Over widespread areas? | | ✓ |
| 12. Are decant trashracks clear and in place? | N/A | | From downstream foundation area? | | ✓ |
| 13. Depressions or sinkholes in tailings surface or whirlpool in the pool area? | | ✓ | "Boils" beneath stream or ponded water? | | ✓ |
| 14. Clogged spillways, groin or diversion ditches? | | ✓ | Around the outside of the decant pipe? | N | A |
| 15. Are spillway or ditch linings deteriorated? | | ✓ | 22. Surface movements in valley bottom or on hillside? | | ✓ |
| 16. Are outlets of decant or underdrains blocked? | N/A | | 23. Water against downstream toe? | ✓ | |
| 17. Cracks or scarps on slopes? | | ✓ | 24. Were Photos taken during the dam inspection? | ✓ | |

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #

Comments

- 1) Inspections completed by plant personnel on a semi-annual basis.
- 2) Elevation based on visual estimates at time of inspection.
- 5) Elevation based on construction drawings.
- 6) Groundwater levels are measured in wells semi-annually.
- 18) Evidence of beaching at historical water line along much of upstream slope.
- 23) Backwaters of Wisconsin River abut the toe of downstream embankment during high-water events.

**Coal Combustion Waste (CCW)
Impoundment Inspection**Impoundment NPDES Permit # WI0002780
Date 9/28/10INSPECTOR Doug Simon, P.E.
Patrick J. Harrison, P.E.Impoundment Name Secondary Ash Pond
Impoundment Company Wisconsin Power & Light
EPA Region Region V
State Agency (Field Office) Addresss WDNR - 2514 Morse Street
Janesville, WI 53545Name of Impoundment Secondary Ash Pond
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)New _____ Update x

Is impoundment currently under construction?

Yes

No

_____ x

Is water or ccw currently being pumped into the impoundment?

_____ x**IMPOUNDMENT FUNCTION:** Inactive Since 2004; Secondary Settling Pond Prior to 2004Nearest Downstream Town : Name Poynette, WIDistance from the impoundment 10 miles

Impoundment

Location: Longitude 43 Degrees 29 Minutes 32 SecondsLatitude 89 Degrees 25 Minutes 39 SecondsState WI County ColumbiaDoes a state agency regulate this impoundment? YES x NO _____If So Which State Agency? Wisconsin Department of Natural Resources, Solid Waste Division

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

 LESS THAN LOW HAZARD POTENTIAL: Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ LOW HAZARD POTENTIAL: Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

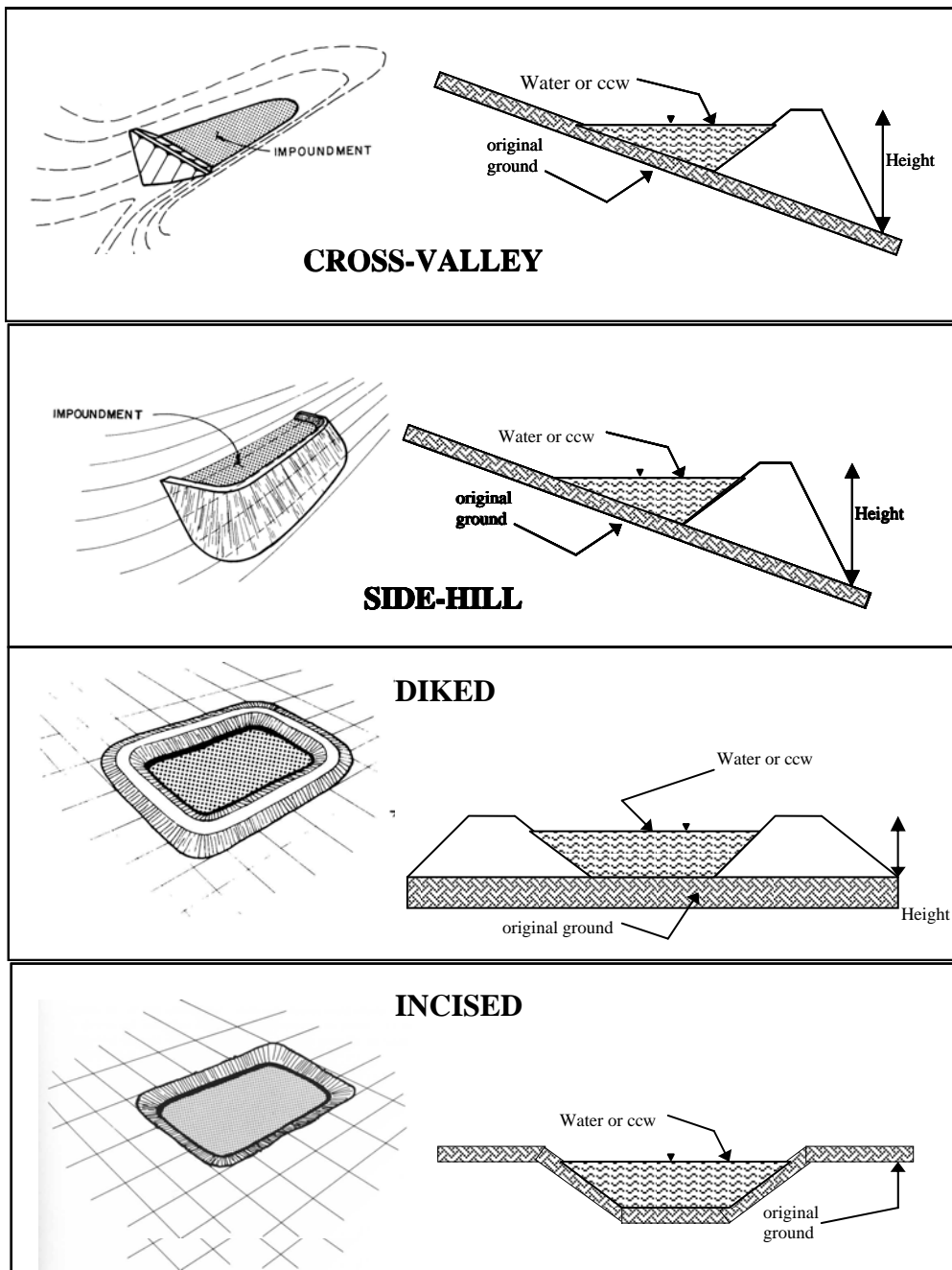
x **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

The impoundment is currently inactive and receives only direct rainfall and limited stormwater runoff. However, if pond is made active, failure could result in economic loss and environmental damage. Therefore, it is our opinion that the impoundment has a significant hazard potential.

CONFIGURATION:



- ☐ Cross-Valley
- ☐ Side-Hill
- ☐ Diked
- ☐ Incised (form completion optional)
- ☒ Combination Incised/Diked

Embankment Height 23 feet

Pool Area 16 acres

Current Freeboard About 15 feet

Embankment Material Native Sand and Gravel

Liner None Observed or Reported

Liner Permeability NA

TYPE OF OUTLET (Mark all that apply)

_____ **Open Channel Spillway**

_____ Trapezoidal

_____ Triangular

_____ Rectangular

_____ Irregular

_____ depth

_____ bottom (or average) width

_____ top width

_____ **Outlet**

_____ inside diameter

Material

_____ corrugated metal

_____ welded steel

_____ concrete

_____ plastic (hdpe, pvc, etc.)

_____ other (specify) _____

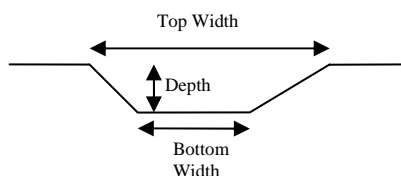
Is water flowing through the outlet? YES _____ NO _____

 x **No Outlet**

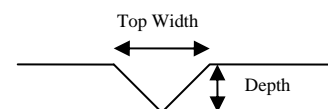
_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By Sargent & Lundy Engineers; Chicago, IL

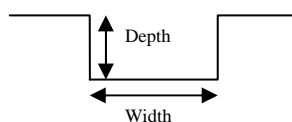
TRAPEZOIDAL



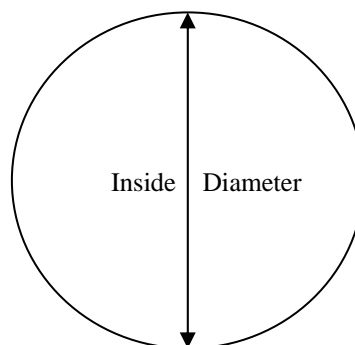
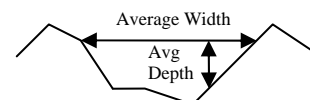
TRIANGULAR



RECTANGULAR



IRREGULAR



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US EPA ARCHIVE DOCUMENT

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface. There is no handwriting or other markings on the paper.

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

EPA Form XXXX-XXX, Jan 09



| | | | |
|--|---|------------------|-------------------------|
| Site Name: | Columbia Generating Station | Date: | September 28, 2010 |
| Unit Name: | Polishing Pond | Operator's Name: | Wisconsin Power & Light |
| Unit I.D.: | Hazard Potential Classification: High Significant Low LTL | | |
| Inspector's Name: Doug Simon, P.E. & Patrick J. Harrison, P.E. | | | |

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

| | Yes | No | | Yes | No |
|--|-----|---------------|---|-----|----|
| 1. Frequency of Company's Dam Inspections? | | Not Inspected | 18. Sloughing or bulging on slopes? | | ✓ |
| 2. Pool elevation (operator records)? | | No Water | 19. Major erosion or slope deterioration? | | ✓ |
| 3. Decant inlet elevation (operator records)? | | N/A | 20. Decant Pipes: | | |
| 4. Open channel spillway elevation (operator records)? | | No Water | Is water entering inlet, but not exiting outlet? | N | A |
| 5. Lowest dam crest elevation (operator records)? | | N/A | Is water exiting outlet, but not entering inlet? | N | A |
| 6. If instrumentation is present, are readings recorded (operator records)? | | ✓ | Is water exiting outlet flowing clear? | N | A |
| 7. Is the embankment currently under construction? | ✓ | | 21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below): | | |
| 8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)? | | ✓ | From underdrain? | N | A |
| 9. Trees growing on embankment? (If so, indicate largest diameter below) | | ✓ | At isolated points on embankment slopes? | | ✓ |
| 10. Cracks or scarps on crest? | | ✓ | At natural hillside in the embankment area? | | ✓ |
| 11. Is there significant settlement along the crest? | | ✓ | Over widespread areas? | | ✓ |
| 12. Are decant trashracks clear and in place? | N/A | | From downstream foundation area? | | ✓ |
| 13. Depressions or sinkholes in tailings surface or whirlpool in the pool area? | N/A | | "Boils" beneath stream or ponded water? | | ✓ |
| 14. Clogged spillways, groin or diversion ditches? | | ✓ | Around the outside of the decant pipe? | N | A |
| 15. Are spillway or ditch linings deteriorated? | | ✓ | 22. Surface movements in valley bottom or on hillside? | | ✓ |
| 16. Are outlets of decant or underdrains blocked? | N/A | | 23. Water against downstream toe? | | ✓ |
| 17. Cracks or scarps on slopes? | | ✓ | 24. Were Photos taken during the dam inspection? | ✓ | |

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #

Comments

- 1) This impoundment has been inactive since 2004. Regularly scheduled inspections are not currently performed. A visual inspection was performed on March 10, 2009 by an internal plant team. Plant personnel are developing a plan for an internal evaluation program including periodic inspections.
- 2) No water was present in the impoundment.
- 3) Crest elevation data was not available at the time of checklist completion.
- 4) No water was present in the impoundment.

**Coal Combustion Waste (CCW)
Impoundment Inspection**Impoundment NPDES Permit # WI0002780
Date 9/28/10INSPECTOR Doug Simon, P.E.
Patrick J. Harrison, P.E.Impoundment Name Polishing Pond
Impoundment Company Wisconsin Power & Light
EPA Region Region V
State Agency (Field Office) Addresss WDNR - 2514 Morse Street
Janesville, WI 53545Name of Impoundment Polishing Pond
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)New _____ Update x

Is impoundment currently under construction?

Yes

No

_____ x

Is water or ccw currently being pumped into the impoundment?

_____ x**IMPOUNDMENT FUNCTION:** Inactive Since 2004; Previously Used to Polish Water Prior to DischargeNearest Downstream Town : Name Poynette, WIDistance from the impoundment 10 miles

Impoundment

Location: Longitude 43 Degrees 10 Minutes 14 SecondsLatitude 89 Degrees 24 Minutes 57 SecondsState WI County ColumbiaDoes a state agency regulate this impoundment? YES x NO _____If So Which State Agency? Wisconsin Department of Natural Resources, Solid Waste Division

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

x **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

_____ LOW HAZARD POTENTIAL: Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

SIGNIFICANT HAZARD POTENTIAL: Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

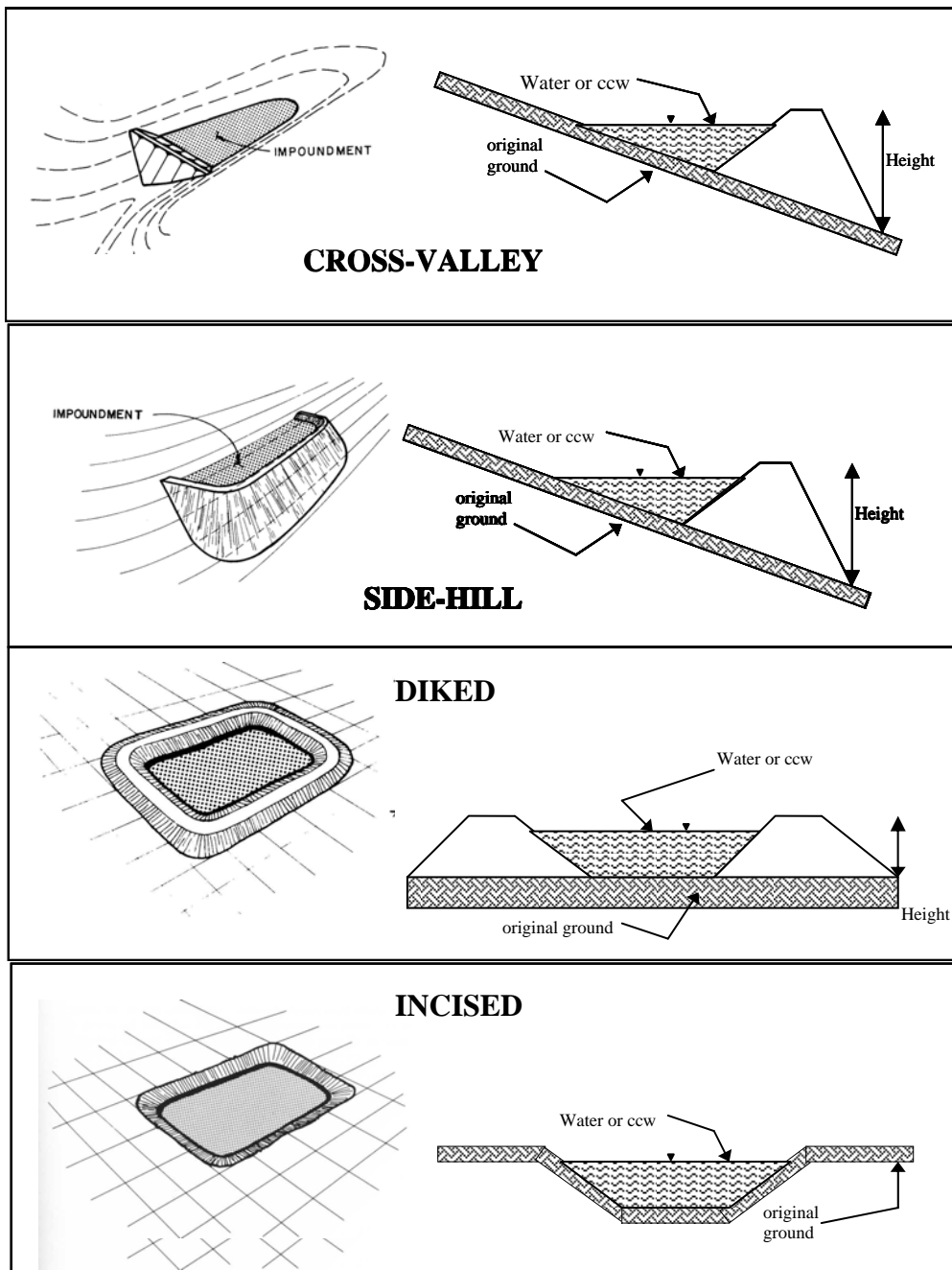
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

There are no structures or operations that would be impacted if embankments failed.

[illegible]

CONFIGURATION:



☐ Cross-Valley
☐ Side-Hill
☐ Diked
☒ Incised (form completion optional)
☐ Combination Incised/Diked
 Embankment Height 10 feet Embankment Material Native Soils
 Pool Area 1 acres Liner None Observed or Reported
 Current Freeboard 10 feet Liner Permeability Unknown

TYPE OF OUTLET (Mark all that apply)

☐ **Open Channel Spillway**

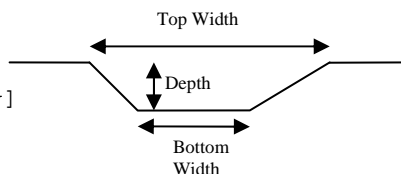
☐ Trapezoidal

☐ Triangular

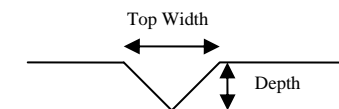
☒ **Rectangular** Primary [Emergency]

☐ Irregular

TRAPEZOIDAL



TRIANGULAR

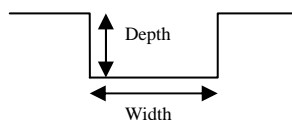


36" [24"] depth

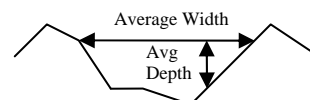
66" [36"] bottom (or average) width

66" [36"] top width

RECTANGULAR



IRREGULAR



☐ **Outlet**

☐ inside diameter

Material

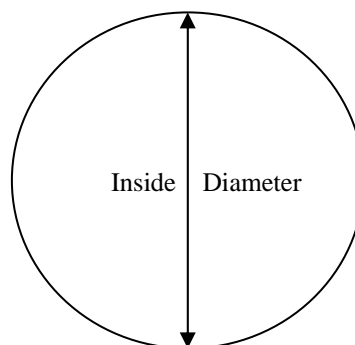
☐ corrugated metal

☐ welded steel

☐ concrete

☐ plastic (hdpe, pvc, etc.)

☐ other (specify) _____



Is water flowing through the outlet? YES _____ NO ☒

☐ **No Outlet**

☐ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By Sargent & Lundy Engineers; Chicago, IL

US EPA ARCHIVE DOCUMENT

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[illegible]

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

EPA Form XXXX-XXX, Jan 09



| | |
|-------------------|--|
| Site Name: | Date: |
| Unit Name: | Operator's Name: |
| Unit I.D.: | Hazard Potential Classification: High Significant Low |
| Inspector's Name: | |

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

| | Yes | No | | Yes | No |
|--|-----|----|---|-----|----|
| 1. Frequency of Company's Dam Inspections? | | | 18. Sloughing or bulging on slopes? | | |
| 2. Pool elevation (operator records)? | | | 19. Major erosion or slope deterioration? | | |
| 3. Decant inlet elevation (operator records)? | | | 20. Decant Pipes: | | |
| 4. Open channel spillway elevation (operator records)? | | | Is water entering inlet, but not exiting outlet? | N | A |
| 5. Lowest dam crest elevation (operator records)? | | | Is water exiting outlet, but not entering inlet? | N | A |
| 6. If instrumentation is present, are readings recorded (operator records)? | | | Is water exiting outlet flowing clear? | N | A |
| 7. Is the embankment currently under construction? | | | 21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below): | | |
| 8. Foundation preparation (remove vegetation, stumps, topsoil in area where embankment fill will be placed)? | | | From underdrain? | N | A |
| 9. Trees growing on embankment? (If so, indicate largest diameter below) | | | At isolated points on embankment slopes? | | |
| 10. Cracks or scarps on crest? | | | At natural hillside in the embankment area? | | |
| 11. Is there significant settlement along the crest? | | | Over widespread areas? | | |
| 12. Are decant trashracks clear and in place? | N | A | From downstream foundation area? | | |
| 13. Depressions or sinkholes in tailings surface or whirlpool in the pool area? | | | "Boils" beneath stream or ponded water? | | |
| 14. Clogged spillways, groin or diversion ditches? | N | A | Around the outside of the decant pipe? | N | A |
| 15. Are spillway or ditch linings deteriorated? | N | A | 22. Surface movements in valley bottom or on hillside? | | |
| 16. Are outlets of decant or underdrains blocked? | N | A | 23. Water against downstream toe? | N | A |
| 17. Cracks or scarps on slopes? | | | 24. Were Photos taken during the dam inspection? | | |

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #Comments

**Coal Combustion Waste (CCW)
Impoundment Inspection**Impoundment NPDES Permit # WI0002780
Date 9/28/10INSPECTOR Doug Simon, P.E.
Patrick J. Harrison, P.E.Impoundment Name Landfill Stormwater Pond
Impoundment Company Wisconsin Power & Light
EPA Region Region V
State Agency (Field Office) Addresss WDNR - 2514 Morse Street
Janesville, WI 53545Name of Impoundment Landfill Stormwater Pond
(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)New _____ Update x

Is impoundment currently under construction?

Yes

No

_____ x

Is water or ccw currently being pumped into the impoundment?

_____ x**IMPOUNDMENT FUNCTION:** Collection of Stormwater Runoff from Ash LandfillNearest Downstream Town : Name Poynette, WIDistance from the impoundment 10 miles

Impoundment

Location: Longitude 43 Degrees 29 Minutes 10 SecondsLatitude 89 Degrees 24 Minutes 39 SecondsState WI County ColumbiaDoes a state agency regulate this impoundment? YES x NO _____If So Which State Agency? Wisconsin Department of Natural Resources, Solid Waste Division

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

x **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

SIGNIFICANT HAZARD POTENTIAL: Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

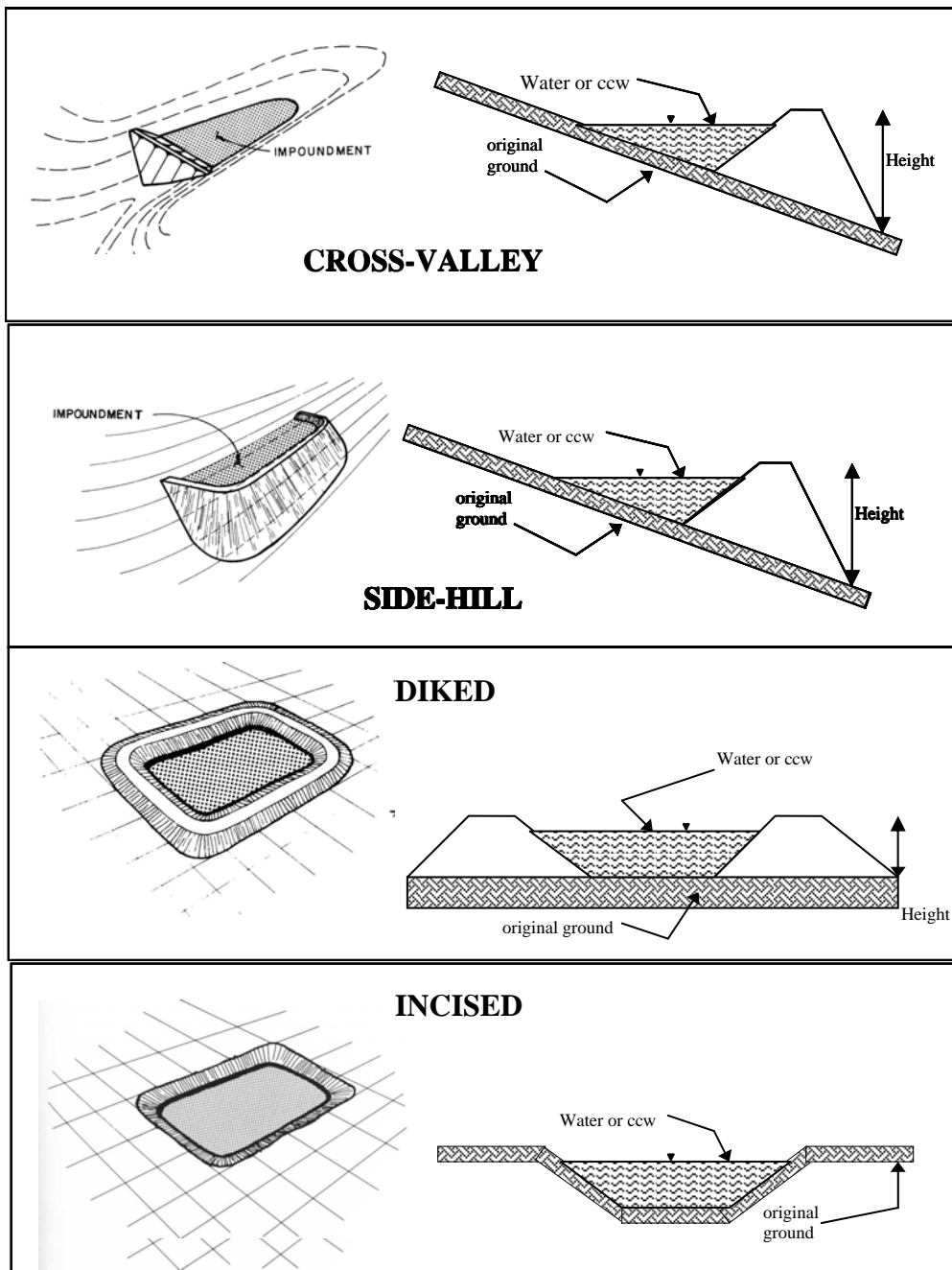
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

The impoundment is incised and receives minimal water. Failure would result in limited economic loss that would be primarily limited to owner's property.

[illegible]

CONFIGURATION:



☐ Cross-Valley
☐ Side-Hill
☐ Diked
☒ Incised (form completion optional)
☐ Combination Incised/Diked

Embankment Height 10 feet Embankment Material Native Soils
 Pool Area 10.8 acres Liner HDPE
 Current Freeboard 2 feet Liner Permeability <10⁻¹⁰ cm/s

TYPE OF OUTLET (Mark all that apply)

_____ **Open Channel Spillway**

_____ Trapezoidal

_____ Triangular

_____ Rectangular

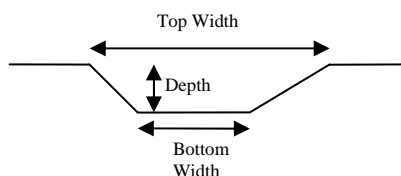
_____ Irregular

_____ depth

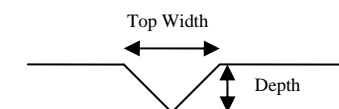
_____ bottom (or average) width

_____ top width

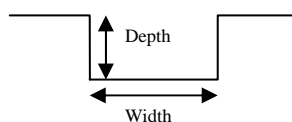
TRAPEZOIDAL



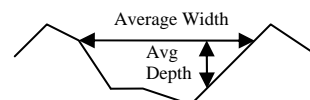
TRIANGULAR



RECTANGULAR



IRREGULAR



_____ **Outlet**

_____ inside diameter

Material

_____ corrugated metal

_____ welded steel

_____ concrete

_____ plastic (hdpe, pvc, etc.)

_____ other (specify) _____

Is water flowing through the outlet? YES _____ NO _____

 x **No Outlet** Water is primarily removed by evaporation. A pump truck is used during high precipitation periods.

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By Warzyn Engineering

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[illegible]

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

EPA Form XXXX-XXX, Jan 09

DAM SAFETY INSPECTION CHECKLIST

| | |
|---|---|
| NAME OF DAM: <u>Primary Ash Pond Impoundment</u> | STATE ID #: <u>WI0002780</u> |
| REGISTERED: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | NID ID #: _____ |
| STATE SIZE CLASSIFICATION: <u>Small</u> | STATE HAZARD CLASSIFICATION: <u>Significant</u> |
| | CHANGE IN HAZARD CLASSIFICATION REQUESTED?: _____ |
| <u>DAM LOCATION INFORMATION</u> | |
| CITY/TOWN: <u>Pardeeville, WI</u> | COUNTY: <u>Columbia County, WI</u> |
| DAM LOCATION: <u>W8375 Murray Road</u> (street address if known) | ALTERNATE DAM NAME: _____ |
| USGS QUAD.: <u>Poynette, WI (1984), Portage, WI (1984)</u> | LAT.: <u>43 29' 35"</u> LONG.: <u>89 25' 10"</u> |
| DRAINAGE BASIN: _____ | RIVER: <u>N/A</u> |
| IMPOUNDMENT NAME(S): <u>Primary Ash Pond Impoundment</u> | |
| <u>GENERAL DAM INFORMATION</u> | |
| TYPE OF DAM: <u>Incised and bermed Ash Impoundments</u> | OVERALL LENGTH (FT): <u>4,200</u> |
| PURPOSE OF DAM: <u>Ash Impoundment</u> | NORMAL POOL STORAGE (ACRE-FT): <u>72</u> (Estimated) |
| YEAR BUILT: <u>1970's</u> | MAXIMUM POOL STORAGE (ACRE-FT): <u>100</u> |
| STRUCTURAL HEIGHT (FT): <u>23</u> | EL. NORMAL POOL (FT): <u>796.0</u> |
| HYDRAULIC HEIGHT (FT): <u>14</u> | EL. MAXIMUM POOL (FT): <u>802.0</u> |

☐ YES☐ NO☐ YES☐ NO

| | | | |
|---|--------------------------------------|--|-----------|
| NAME OF DAM: <u>Primary Ash Pond Impoundment</u> | | STATE ID #: <u>WI0002780</u> | |
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | |
| <u>INSPECTION SUMMARY</u> | | | |
| DATE OF INSPECTION: <u>September 28, 2010</u> | | DATE OF PREVIOUS INSPECTION: _____ | |
| TEMPERATURE/WEATHER: <u>Sunny, 70 degrees Fahrenheit</u> | | ARMY CORPS PHASE I: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES, date _____ | |
| CONSULTANT: <u>GZA GeoEnvironmental, Inc</u> | | PREVIOUS DCR PHASE I: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES, date _____ | |
| BENCHMARK/DATUM: <u>Mean Sea Level</u> | | | |
| OVERALL PHYSICAL CONDITION OF DAM: <u>FAIR</u> | | DATE OF LAST REHABILITATION: <u>N/A</u> | |
| SPILLWAY CAPACITY: <u>0-50% of the SDF or Unknown</u> | | | |
| EL. POOL DURING INSP.: <u>796</u> | | EL. TAILWATER DURING INSP.: <u>N/A</u> | |
| <u>PERSONS PRESENT AT INSPECTION</u> | | | |
| <u>NAME</u> | <u>TITLE/POSITION</u> | <u>REPRESENTING</u> | |
| <u>William Skalitzky</u> | <u>Senior Env. Specialist</u> | <u>Alliant Energy</u> | |
| <u>Phil Tegen</u> | <u>Sr. Env and Safety Specialist</u> | <u>Alliant Energy</u> | |
| <u>Jim Kralick</u> | <u>Hydrogeologist</u> | <u>Wisconsin Department of Natural Resources</u> | |
| <u>Doug Simon</u> | <u>Geological Engineering</u> | <u>GZA GeoEnvironmental, Inc</u> | |
| <u>Patrick Harrison, P.E.</u> | <u>Senior Geotechnical Eng.</u> | <u>GZA GeoEnvironmental, Inc</u> | |
| <u>EVALUATION INFORMATION</u> | | | |
| | | Click on box to select E-code | |
| E1) TYPE OF DESIGN | <u>3</u> | E8) LOW-LEVEL OUTLET CONDITION | <u>1</u> |
| E2) LEVEL OF MAINTENANCE | <u>4</u> | E9) SPILLWAY DESIGN FLOOD CAPACITY | <u>1</u> |
| E3) EMERGENCY ACTION PLAN | <u>2</u> | E10) OVERALL PHYSICAL CONDITION | <u>3</u> |
| E4) EMBANKMENT SEEPAGE | <u>5</u> | E11) ESTIMATED REPAIR COST | |
| E5) EMBANKMENT CONDITION | <u>5</u> | ROADWAY OVER CREST | <u>NO</u> |
| E6) CONCRETE CONDITION | <u>N/A</u> | BRIDGE NEAR DAM | <u>NO</u> |
| E7) LOW-LEVEL OUTLET CAPACITY | <u>1</u> | | |
| NAME OF INSPECTING ENGINEER: <u>Patrick Harrison, P.E.; Doug Simon</u> SIGNATURE: _____ | | | |

| | | | | | |
|---|---|---|--|---|---|
| NAME OF DAM: <u>Primary Ash Pond Impoundment</u> | | STATE ID #: <u>WI0002780</u> | | | |
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | | | |
| <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> OWNER: ORGANIZATION <u>Alliant, WP&L, MG&E</u> NAME/TITLE _____ STREET <u>W8375 Murray Road</u> TOWN, STATE, ZIP <u>Pardeeville, WI</u> PHONE <u>608-742-0715</u> EMERGENCY PH. # <u>608-751-3886</u> FAX _____ EMAIL _____ OWNER TYPE <u>Private</u> </td> <td style="width: 50%; vertical-align: top;"> CARETAKER: ORGANIZATION <u>Alliant, WP&L, MG&E</u> NAME/TITLE <u>Jerald Lokenvitz/Plant Manager</u> STREET <u>W8375 Murray Road</u> TOWN, STATE, ZIP <u>Pardeeville, WI</u> PHONE <u>608-742-0715</u> EMERGENCY PH. # <u>608-751-3886</u> FAX _____ EMAIL geraldlokenvitz@alliantenergy.com </td> </tr> </table> | | | | OWNER: ORGANIZATION <u>Alliant, WP&L, MG&E</u> NAME/TITLE _____ STREET <u>W8375 Murray Road</u> TOWN, STATE, ZIP <u>Pardeeville, WI</u> PHONE <u>608-742-0715</u> EMERGENCY PH. # <u>608-751-3886</u> FAX _____ EMAIL _____ OWNER TYPE <u>Private</u> | CARETAKER: ORGANIZATION <u>Alliant, WP&L, MG&E</u> NAME/TITLE <u>Jerald Lokenvitz/Plant Manager</u> STREET <u>W8375 Murray Road</u> TOWN, STATE, ZIP <u>Pardeeville, WI</u> PHONE <u>608-742-0715</u> EMERGENCY PH. # <u>608-751-3886</u> FAX _____ EMAIL geraldlokenvitz@alliantenergy.com |
| OWNER: ORGANIZATION <u>Alliant, WP&L, MG&E</u> NAME/TITLE _____ STREET <u>W8375 Murray Road</u> TOWN, STATE, ZIP <u>Pardeeville, WI</u> PHONE <u>608-742-0715</u> EMERGENCY PH. # <u>608-751-3886</u> FAX _____ EMAIL _____ OWNER TYPE <u>Private</u> | CARETAKER: ORGANIZATION <u>Alliant, WP&L, MG&E</u> NAME/TITLE <u>Jerald Lokenvitz/Plant Manager</u> STREET <u>W8375 Murray Road</u> TOWN, STATE, ZIP <u>Pardeeville, WI</u> PHONE <u>608-742-0715</u> EMERGENCY PH. # <u>608-751-3886</u> FAX _____ EMAIL geraldlokenvitz@alliantenergy.com | | | | |
| PRIMARY SPILLWAY TYPE <u>None Present, water Piped back to facility</u> | | | | | |
| SPILLWAY LENGTH (FT) <u>N/A</u> | | SPILLWAY CAPACITY (CFS) <u>N/A</u> | | | |
| AUXILIARY SPILLWAY TYPE <u>N/A</u> | | AUX. SPILLWAY CAPACITY (CFS) <u>N/A</u> | | | |
| NUMBER OF OUTLETS <u>None Present</u> | | OUTLET(S) CAPACITY (CFS) <u>N/A</u> | | | |
| TYPE OF OUTLETS <u>N/A</u> | | TOTAL DISCHARGE CAPACITY (CFS) <u>N/A</u> | | | |
| DRAINAGE AREA (SQ MI) <u>None outside impoundment</u> | | SPILLWAY DESIGN FLOOD (PERIOD/CFS) <u>N/A</u> | | | |
| HAS DAM BEEN BREACHED OR OVERTOPPED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PROVIDE DATE(S) _____ | | | | | |
| FISH LADDER (LIST TYPE IF PRESENT) <u>N/A</u> | | | | | |
| DOES CREST SUPPORT PUBLIC ROAD? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, ROAD NAME: _____ | | | | | |
| PUBLIC BRIDGE WITHIN 50' OF DAM? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, ROAD/BRIDGE NAME: _____ MHD BRIDGE NO. (IF APPLICABLE) _____ | | | | | |

NAME OF DAM: Primary Ash Pond ImpoundmentSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (CREST)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|-------------------------------------|-------------------------|--------------|---------|--------|
| CREST | 1. SURFACE TYPE | Gravel Road | | X | |
| | 2. SURFACE CRACKING | None Observed | x | | |
| | 3. SINKHOLES, ANIMAL BURROWS | None Observed | x | | |
| | 4. VERTICAL ALIGNMENT (DEPRESSIONS) | No depressions Observed | x | | |
| | 5. HORIZONTAL ALIGNMENT | No problems observed | x | | |
| | 6. RUTS AND/OR PUDDLES | Some potholes | | | X |
| | 7. VEGETATION (PRESENCE/CONDITION) | Grass | x | | |
| | 8. ABUTMENT CONTACT | N/A | x | | |
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ADDITIONAL COMMENTS: Potholes in gravel access road should be repaired and regraded.

NAME OF DAM: Primary Ash Pond ImpoundmentSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (D/S SLOPE)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|----------------|------------------------------------|--|-----------|---------|--------|
| D/S SLOPE | 1. WET AREAS (NO FLOW) | None Observed | x | | |
| | 2. SEEPAGE | None Observed | x | | |
| | 3. SLIDE, SLOUGH, SCARP | None Observed | x | | |
| | 4. EMB.-ABUTMENT CONTACT | N/A | x | | |
| | 5. SINKHOLE/ANIMAL BURROWS | None Observed | x | | |
| | 6. EROSION | Wave Action Erosion on eastern embankment, erosion ditch | | | X |
| | 7. UNUSUAL MOVEMENT | None Observed | x | | |
| | 8. VEGETATION (PRESENCE/CONDITION) | Grass, well maintained. Tree stumps on northern embankment | x | | |
| | | | | | |
| | | | | | |

ADDITIONAL COMMENTS: Large erosion ditch on east side should be repaired. Other erosion features should be monitored.Tree stumps should be removed.

NAME OF DAM: Primary Ash Pond ImpoundmentSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (U/S SLOPE)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|------------------------------------|---------------------|--------------|---------|--------|
| U/S SLOPE | 1. SLIDE, SLOUGH, SCARP | None observed | x | | |
| | 2. SLOPE PROTECTION TYPE AND COND. | None observed | x | | |
| | 3. SINKHOLE/ANIMAL BURROWS | None observed | x | | |
| | 4. EMB.-ABUTMENT CONTACT | N/A | x | | |
| | 5. EROSION | Wave action erosion | | X | |
| | 6. UNUSUAL MOVEMENT | None observed | x | | |
| | 7. VEGETATION (PRESENCE/CONDITION) | Grass | x | | |
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ADDITIONAL COMMENTS: Extent of erosion should be evaluated.

NAME OF DAM: Primary Ash Pond ImpoundmentSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**INSTRUMENTATION**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|----------------------------|---------------------------|--------------|---------|--------|
| INSTR. | 1. PIEZOMETERS | None present | X | | |
| | 2. OBSERVATION WELLS | M3, M4R | X | | |
| | 3. STAFF GAGE AND RECORDER | At pump house | X | | |
| | 4. WEIRS | None Present | X | | |
| | 5. INCLINOMETERS | None Present | X | | |
| | 6. SURVEY MONUMENTS | None present | X | | |
| | 7. DRAINS | None Present | X | | |
| | 8. FREQUENCY OF READINGS | No measurements are taken | X | | |
| | 9. LOCATION OF READINGS | | X | | |
| | | | | | |
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ADDITIONAL COMMENTS:

DAM SAFETY INSPECTION CHECKLIST

| | | | |
|--|---|---|---|
| NAME OF DAM: | <u>Secondary Ash Pond</u> | STATE ID #: | <u>WI0002780</u> |
| REGISTERED: | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | NID ID #: | <u> </u> |
| STATE SIZE CLASSIFICATION: | <u>Small</u> | STATE HAZARD CLASSIFICATION: | <u>Significant</u> |
| | | CHANGE IN HAZARD CLASSIFICATION REQUESTED?: | <u> </u> |
| <u>DAM LOCATION INFORMATION</u> | | | |
| CITY/TOWN: | <u>Pardeeville, WI</u> | COUNTY: | <u>Columbia County, WI</u> |
| DAM LOCATION: (street address if known) | <u>5699 Colby Lake Road, Hoyt Lakes, Minnesota</u> | ALTERNATE DAM NAME: | <u> </u> |
| USGS QUAD.: | <u>Poynette, WI (1984), Portage, WI (1984)</u> | LAT.: | <u>43 29' 32"</u> |
| | | LONG.: | <u>89 25' 39"</u> |
| DRAINAGE BASIN: | <u>15 acres</u> | RIVER: | <u>N/A</u> |
| IMPOUNDMENT NAME(S): | <u>Secondary Ash Pond Impoundment</u> | | |
| <u>GENERAL DAM INFORMATION</u> | | | |
| TYPE OF DAM: | <u>Incised and bermed Ash Impoundments</u> | OVERALL LENGTH (FT): | <u>4,000</u> |
| PURPOSE OF DAM: | <u>Ash Impoundment</u> | NORMAL POOL STORAGE (ACRE-FT): | <u>204</u> (Estimated) |
| YEAR BUILT: | <u>1970's</u> | MAXIMUM POOL STORAGE (ACRE-FT): | <u>275</u> |
| STRUCTURAL HEIGHT (FT): | <u>23</u> | EL. NORMAL POOL (FT): | <u>790.0</u> |
| HYDRAULIC HEIGHT (FT): | <u>8</u> | EL. MAXIMUM POOL (FT): | <u>802.0</u> |

☐ YES☐ NO☐ YES☐ NO

| | | | |
|---|--------------------------------------|--|-----------|
| NAME OF DAM: <u>Secondary Ash Pond</u> | | STATE ID #: <u>WI0002780</u> | |
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | |
| <u>INSPECTION SUMMARY</u> | | | |
| DATE OF INSPECTION: <u>September 28, 2010</u> | | DATE OF PREVIOUS INSPECTION: _____ | |
| TEMPERATURE/WEATHER: <u>Sunny, 70 degrees Fahrenheit</u> | | ARMY CORPS PHASE I: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES, date _____ | |
| CONSULTANT: <u>GZA GeoEnvironmental, Inc</u> | | PREVIOUS DCR PHASE I: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES, date _____ | |
| BENCHMARK/DATUM: <u>Mean Sea Level</u> | | | |
| OVERALL PHYSICAL CONDITION OF DAM: <u>FAIR</u> | | DATE OF LAST REHABILITATION: <u>N/A</u> | |
| SPILLWAY CAPACITY: <u>0-50% of the SDF or Unknown</u> | | | |
| EL. POOL DURING INSP.: <u>790</u> | | EL. TAILWATER DURING INSP.: <u>N/A</u> | |
| <u>PERSONS PRESENT AT INSPECTION</u> | | | |
| <u>NAME</u> | <u>TITLE/POSITION</u> | <u>REPRESENTING</u> | |
| <u>William Skalitzky</u> | <u>Senior Env. Specialist</u> | <u>Alliant Energy</u> | |
| <u>Phil Tegen</u> | <u>Sr. Env and Safety Specialist</u> | <u>Alliant Energy</u> | |
| <u>Jim Kralick</u> | <u>Hydrogeologist</u> | <u>Wisconsin Department of Natural Resources</u> | |
| <u>Doug Simon</u> | <u>Geological Engineering</u> | <u>GZA GeoEnvironmental, Inc</u> | |
| <u>Patrick Harrison, P.E.</u> | <u>Senior Geotechnical Eng.</u> | <u>GZA GeoEnvironmental, Inc</u> | |
| <u>EVALUATION INFORMATION</u> | | | |
| | | Click on box to select E-code | |
| E1) TYPE OF DESIGN | <u>3</u> | E8) LOW-LEVEL OUTLET CONDITION | <u>1</u> |
| E2) LEVEL OF MAINTENANCE | <u>4</u> | E9) SPILLWAY DESIGN FLOOD CAPACITY | <u>1</u> |
| E3) EMERGENCY ACTION PLAN | <u>2</u> | E10) OVERALL PHYSICAL CONDITION | <u>3</u> |
| E4) EMBANKMENT SEEPAGE | <u>5</u> | E11) ESTIMATED REPAIR COST | |
| E5) EMBANKMENT CONDITION | <u>5</u> | ROADWAY OVER CREST | <u>NO</u> |
| E6) CONCRETE CONDITION | <u>N/A</u> | BRIDGE NEAR DAM | <u>NO</u> |
| E7) LOW-LEVEL OUTLET CAPACITY | <u>1</u> | | |
| NAME OF INSPECTING ENGINEER: <u>Patrick Harrison, P.E.; Doug Simon, P.E.</u> SIGNATURE: _____ | | | |

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|--|------------------------------------|--|---|
| NAME OF DAM: <u>Secondary Ash Pond</u> | | STATE ID #: <u>WI0002780</u> | |
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | |
| | | | |
| OWNER: | ORGANIZATION | CARETAKER: | ORGANIZATION |
| | <u>Alliant, WP&L, MG&E</u> | | <u>Alliant, WP&L, MG&E</u> |
| | NAME/TITLE | | NAME/TITLE |
| | <u>W8375 Murray Road</u> | | <u>Jerald Lokenvitz/Plant Manager</u> |
| | STREET | | STREET |
| | <u>Pardeeville, WI</u> | | <u>W8375 Murray Road</u> |
| | TOWN, STATE, ZIP | | TOWN, STATE, ZIP |
| | <u>608-742-0715</u> | | <u>Pardeeville, WI</u> |
| | PHONE | | PHONE |
| | <u>608-751-3886</u> | | <u>608-742-0715</u> |
| | EMERGENCY PH. # | | EMERGENCY PH. # |
| | <u>608-751-3886</u> | | <u>608-751-3886</u> |
| | FAX | | FAX |
| | <u> </u> | | <u> </u> |
| | EMAIL | | EMAIL |
| | <u> </u> | | <u>geraldlokvitz@alliantenergy.com</u> |
| | OWNER TYPE | | <u> </u> |
| | <u>Private</u> | | <u> </u> |
| | | | |
| PRIMARY SPILLWAY TYPE | | <u>None Present, water Piped back to facility</u> | |
| SPILLWAY LENGTH (FT) | | <u>N/A</u> | |
| AUXILIARY SPILLWAY TYPE | | <u>N/A</u> | |
| NUMBER OF OUTLETS | | <u>None Present</u> | |
| TYPE OF OUTLETS | | <u>N/A</u> | |
| DRAINAGE AREA (SQ MI) | | <u>None outside impoundment</u> | |
| HAS DAM BEEN BREACHED OR OVERTOPPED | | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PROVIDE DATE(S) <u> </u> | |
| FISH LADDER (LIST TYPE IF PRESENT) | | <u>N/A</u> | |
| DOES CREST SUPPORT PUBLIC ROAD? | | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, ROAD NAME: <u> </u> | |
| PUBLIC BRIDGE WITHIN 50' OF DAM? | | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, ROAD/BRIDGE NAME: <u> </u> | |
| | | MHD BRIDGE NO. (IF APPLICABLE) <u> </u> | |

NAME OF DAM: Secondary Ash PondSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (CREST)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|----------------|-------------------------------------|-------------------------|-----------|---------|--------|
| CREST | 1. SURFACE TYPE | Gravel Road | | X | |
| | 2. SURFACE CRACKING | None Observed | x | | |
| | 3. SINKHOLES, ANIMAL BURROWS | None Observed | x | | |
| | 4. VERTICAL ALIGNMENT (DEPRESSIONS) | No depressions Observed | x | | |
| | 5. HORIZONTAL ALIGNMENT | No problems observed | x | | |
| | 6. RUTS AND/OR PUDDLES | Some potholes | | | X |
| | 7. VEGETATION (PRESENCE/CONDITION) | Grass | x | | |
| | 8. ABUTMENT CONTACT | N/A | x | | |
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ADDITIONAL COMMENTS: Potholes in gravel access road should be repaired and regraded.

NAME OF DAM: Secondary Ash PondSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (D/S SLOPE)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|------------------------------------|---------------------|--------------|---------|--------|
| D/S SLOPE | 1. WET AREAS (NO FLOW) | None Observed | x | | |
| | 2. SEEPAGE | None Observed | x | | |
| | 3. SLIDE, SLOUGH, SCARP | None Observed | x | | |
| | 4. EMB.-ABUTMENT CONTACT | N/A | x | | |
| | 5. SINKHOLE/ANIMAL BURROWS | None Observed | x | | |
| | 6. EROSION | Wave action erosion | | X | |
| | 7. UNUSUAL MOVEMENT | None Observed | x | | |
| | 8. VEGETATION (PRESENCE/CONDITION) | Grass | x | | |
| | | | | | |
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ADDITIONAL COMMENTS: Extent of erosion should be evaluated.

NAME OF DAM: Secondary Ash PondSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (U/S SLOPE)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|------------------------------------|---------------------|--------------|---------|--------|
| U/S SLOPE | 1. SLIDE, SLOUGH, SCARP | None observed | x | | |
| | 2. SLOPE PROTECTION TYPE AND COND. | None observed | x | | |
| | 3. SINKHOLE/ANIMAL BURROWS | None observed | x | | |
| | 4. EMB.-ABUTMENT CONTACT | N/A | x | | |
| | 5. EROSION | Wave action erosion | | X | |
| | 6. UNUSUAL MOVEMENT | None observed | x | | |
| | 7. VEGETATION (PRESENCE/CONDITION) | Grass | x | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Secondary Ash PondSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**INSTRUMENTATION**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|----------------------------|---------------------------|--------------|---------|--------|
| INSTR. | 1. PIEZOMETERS | None present | X | | |
| | 2. OBSERVATION WELLS | MW57, MW59 | X | | |
| | 3. STAFF GAGE AND RECORDER | At pump house | X | | |
| | 4. WEIRS | None Present | X | | |
| | 5. INCLINOMETERS | None Present | X | | |
| | 6. SURVEY MONUMENTS | None present | X | | |
| | 7. DRAINS | None Present | X | | |
| | 8. FREQUENCY OF READINGS | No measurements are taken | X | | |
| | 9. LOCATION OF READINGS | | X | | |
| | | | | | |
| | | | | | |
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ADDITIONAL COMMENTS:

DAM SAFETY INSPECTION CHECKLIST

| | | | |
|--|---|---|---|
| NAME OF DAM: | <u>Polishing Pond Impoundments</u> | STATE ID #: | <u>WI0002780</u> |
| REGISTERED: | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | NID ID #: | <u> </u> |
| STATE SIZE CLASSIFICATION: | <u>Small</u> | STATE HAZARD CLASSIFICATION: | <u>Low</u> |
| | | CHANGE IN HAZARD CLASSIFICATION REQUESTED?: | <u> </u> |
| <u>DAM LOCATION INFORMATION</u> | | | |
| CITY/TOWN: | <u>Pardeeville, WI</u> | COUNTY: | <u>Columbia County, WI</u> |
| DAM LOCATION: (street address if known) | <u>W8375 Murray Road</u> | ALTERNATE DAM NAME: | <u> </u> |
| USGS QUAD.: | <u>Poynette, WI (1984), Portage, WI (1984)</u> | LAT.: | <u>43 10' 14"</u> |
| | | LONG.: | <u>89 24' 57"</u> |
| DRAINAGE BASIN: | <u> </u> | RIVER: | <u>N/A</u> |
| IMPOUNDMENT NAME(S): | <u>Polishing Pond Impoundment</u> | | |
| <u>GENERAL DAM INFORMATION</u> | | | |
| TYPE OF DAM: | <u>Incised</u> | OVERALL LENGTH (FT): | <u>1,050</u> |
| PURPOSE OF DAM: | <u>Polish Water Prior to Discharge</u> | NORMAL POOL STORAGE (ACRE-FT): | <u>0</u> |
| YEAR BUILT: | <u>1970's</u> | MAXIMUM POOL STORAGE (ACRE-FT): | <u>5</u> |
| STRUCTURAL HEIGHT (FT): | <u>10</u> | EL. NORMAL POOL (FT): | <u>805.0</u> |
| HYDRAULIC HEIGHT (FT): | <u>0</u> | EL. MAXIMUM POOL (FT): | <u>Not operational / no water present</u> |

☐ YES☐ NO☐ YES☐ NO

| | | | |
|--|--------------------------------------|--|-----------|
| NAME OF DAM: <u>Polishing Pond Impoundments</u> | | STATE ID #: <u>WI0002780</u> | |
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | |
| <u>INSPECTION SUMMARY</u> | | | |
| DATE OF INSPECTION: <u>September 28, 2010</u> | | DATE OF PREVIOUS INSPECTION: _____ | |
| TEMPERATURE/WEATHER: <u>Sunny, 70 degrees Fahrenheit</u> | | ARMY CORPS PHASE I: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES, date _____ | |
| CONSULTANT: <u>GZA GeoEnvironmental, Inc</u> | | PREVIOUS DCR PHASE I: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES, date _____ | |
| BENCHMARK/DATUM: <u>Mean Sea Level</u> | | | |
| OVERALL PHYSICAL CONDITION OF DAM: <u>SATISFACTORY</u> DATE OF LAST REHABILITATION: <u>N/A</u> | | | |
| SPILLWAY CAPACITY: <u>0-50% of the SDF or Unknown</u> | | | |
| EL. POOL DURING INSP.: <u>no water present</u> | | EL. TAILWATER DURING INSP.: <u>N/A</u> | |
| <u>PERSONS PRESENT AT INSPECTION</u> | | | |
| <u>NAME</u> | <u>TITLE/POSITION</u> | <u>REPRESENTING</u> | |
| <u>William Skalitzky</u> | <u>Senior Env. Specialist</u> | <u>Alliant Energy</u> | |
| <u>Phil Tegen</u> | <u>Sr. Env and Safety Specialist</u> | <u>Alliant Energy</u> | |
| <u>Jim Kralick</u> | <u>Hydrogeologist</u> | <u>Wisconsin Department of Natural Resources</u> | |
| <u>Doug Simon</u> | <u>Geological Engineering</u> | <u>GZA GeoEnvironmental, Inc</u> | |
| <u>Patrick Harrison, P.E.</u> | <u>Senior Geotechnical Eng.</u> | <u>GZA GeoEnvironmental, Inc</u> | |
| <u>EVALUATION INFORMATION</u> | | | |
| | | Click on box to select E-code | |
| E1) TYPE OF DESIGN | <u>3</u> | E8) LOW-LEVEL OUTLET CONDITION | <u>1</u> |
| E2) LEVEL OF MAINTENANCE | <u>4</u> | E9) SPILLWAY DESIGN FLOOD CAPACITY | <u>1</u> |
| E3) EMERGENCY ACTION PLAN | <u>2</u> | E10) OVERALL PHYSICAL CONDITION | <u>4</u> |
| E4) EMBANKMENT SEEPAGE | <u>5</u> | E11) ESTIMATED REPAIR COST | |
| E5) EMBANKMENT CONDITION | <u>5</u> | ROADWAY OVER CREST | <u>NO</u> |
| E6) CONCRETE CONDITION | <u>N/A</u> | BRIDGE NEAR DAM | <u>NO</u> |
| E7) LOW-LEVEL OUTLET CAPACITY | <u>1</u> | | |
| NAME OF INSPECTING ENGINEER: <u>Patrick Harrison, P.E.; Doug Simon</u> SIGNATURE: _____ | | | |

| | | | |
|---|------------------------------------|---|---|
| NAME OF DAM: <u>Polishing Pond Impoundments</u> | | STATE ID #: <u>WI0002780</u> | |
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | |
| | | | |
| OWNER: | ORGANIZATION | CARETAKER: | ORGANIZATION |
| | <u>Alliant, WP&L, MG&E</u> | | <u>Alliant, WP&L, MG&E</u> |
| | NAME/TITLE | | NAME/TITLE |
| | <u></u> | | <u>Jerald Lokenvitz/Plant Manager</u> |
| | STREET | | STREET |
| | <u>W8375 Murray Road</u> | | <u>W8375 Murray Road</u> |
| | TOWN, STATE, ZIP | | TOWN, STATE, ZIP |
| | <u>Pardeeville, WI</u> | | <u>Pardeeville, WI</u> |
| | PHONE | | PHONE |
| | <u>608-742-0715</u> | | <u>608-742-0715</u> |
| | EMERGENCY PH. # | | EMERGENCY PH. # |
| | <u>608-751-3886</u> | | <u>608-751-3886</u> |
| | FAX | | FAX |
| | <u></u> | | <u></u> |
| | EMAIL | | EMAIL |
| | <u></u> | | <u>geraldlokenvitz@alliantenergy.com</u> |
| | OWNER TYPE | | |
| | <u>Private</u> | | |
| | | | |
| PRIMARY SPILLWAY TYPE | | <u>uncontrolled concrete</u> | |
| SPILLWAY LENGTH (FT) | | <u>37.5</u> | |
| AUXILIARY SPILLWAY TYPE | | <u>uncontrolled concrete</u> | |
| NUMBER OF OUTLETS | | <u>N/A</u> | |
| TYPE OF OUTLETS | | <u>N/A</u> | |
| DRAINAGE AREA (SQ MI) | | <u>None outside impoundment</u> | |
| HAS DAM BEEN BREACHED OR OVERTOPPED | | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PROVIDE DATE(S) <u></u> | |
| FISH LADDER (LIST TYPE IF PRESENT) | | <u>N/A</u> | |
| DOES CREST SUPPORT PUBLIC ROAD? | | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, ROAD NAME: <u></u> | |
| PUBLIC BRIDGE WITHIN 50' OF DAM? | | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, ROAD/BRIDGE NAME: <u></u> | |
| | | MHD BRIDGE NO. (IF APPLICABLE) <u></u> | |

NAME OF DAM: Polishing Pond ImpoundmentsSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (CREST)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|-------------------------------------|--------------------------|--------------|---------|--------|
| CREST | 1. SURFACE TYPE | Gravel Road, grassy area | | X | |
| | 2. SURFACE CRACKING | None Observed | x | | |
| | 3. SINKHOLES, ANIMAL BURROWS | None Observed | x | | |
| | 4. VERTICAL ALIGNMENT (DEPRESSIONS) | No depressions Observed | x | | |
| | 5. HORIZONTAL ALIGNMENT | No problems observed | x | | |
| | 6. RUTS AND/OR PUDDLES | None Observed | x | | |
| | 7. VEGETATION (PRESENCE/CONDITION) | Grass | x | | |
| | 8. ABUTMENT CONTACT | N/A | x | | |
| | | | | | |
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| | | | | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Polishing Pond ImpoundmentsSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (D/S SLOPE)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|------------------------------------|--------------|--------------|---------|--------|
| D/S SLOPE | 1. WET AREAS (NO FLOW) | N/A | x | | |
| | 2. SEEPAGE | N/A | x | | |
| | 3. SLIDE, SLOUGH, SCARP | N/A | x | | |
| | 4. EMB.-ABUTMENT CONTACT | N/A | x | | |
| | 5. SINKHOLE/ANIMAL BURROWS | N/A | x | | |
| | 6. EROSION | N/A | x | | |
| | 7. UNUSUAL MOVEMENT | N/A | x | | |
| | 8. VEGETATION (PRESENCE/CONDITION) | N/A | x | | |
| | | | | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Polishing Pond ImpoundmentsSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (U/S SLOPE)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|------------------------------------|-----------------------------|--------------|---------|--------|
| U/S SLOPE | 1. SLIDE, SLOUGH, SCARP | None observed | x | | |
| | 2. SLOPE PROTECTION TYPE AND COND. | None observed | x | | |
| | 3. SINKHOLE/ANIMAL BURROWS | None observed | x | | |
| | 4. EMB.-ABUTMENT CONTACT | N/A | x | | |
| | 5. EROSION | None observed | x | | |
| | 6. UNUSUAL MOVEMENT | None observed | x | | |
| | 7. VEGETATION (PRESENCE/CONDITION) | Grass - NOT regularly mowed | x | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Polishing Pond ImpoundmentsSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**INSTRUMENTATION**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|----------------------------|---------------------------|--------------|---------|--------|
| INSTR. | 1. PIEZOMETERS | None present | X | | |
| | 2. OBSERVATION WELLS | MW83 | X | | |
| | 3. STAFF GAGE AND RECORDER | SG4 | X | | |
| | 4. WEIRS | None Present | X | | |
| | 5. INCLINOMETERS | None Present | X | | |
| | 6. SURVEY MONUMENTS | None present | X | | |
| | 7. DRAINS | None Present | X | | |
| | 8. FREQUENCY OF READINGS | No measurements are taken | X | | |
| | 9. LOCATION OF READINGS | | X | | |
| | | | | | |
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| | | | | | |
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ADDITIONAL COMMENTS:

DAM SAFETY INSPECTION CHECKLIST

| | | | |
|---|--|---|--------------------------|
| NAME OF DAM: <u>Landfill Stormwater Pond Impoundment</u> | | STATE ID #: <u>WI0002780</u> | |
| REGISTERED: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | NID ID #: _____ | |
| STATE SIZE CLASSIFICATION: <u>Small</u> | | STATE HAZARD CLASSIFICATION: <u>Low</u> | |
| | | CHANGE IN HAZARD CLASSIFICATION REQUESTED?: _____ | |
| <u><i>DAM LOCATION INFORMATION</i></u> | | | |
| CITY/TOWN: <u>Pardeeville, WI</u> | | COUNTY: <u>Columbia County, WI</u> | |
| DAM LOCATION: <u>W8375 Murray Road</u> (street address if known) | | ALTERNATE DAM NAME: _____ | |
| USGS QUAD.: <u>Poynette, WI (1984), Portage, WI (1984)</u> | | LAT.: <u>43 29' 10"</u> | LONG.: <u>89 24' 39"</u> |
| DRAINAGE BASIN: <u>19 acres</u> | | RIVER: <u>N/A</u> | |
| IMPOUNDMENT NAME(S): <u>Landfill Stormwater Pond</u> | | | |
| <u><i>GENERAL DAM INFORMATION</i></u> | | | |
| TYPE OF DAM: <u>Incised</u> | | OVERALL LENGTH (FT): <u>1,750</u> | |
| PURPOSE OF DAM: <u>Stormwater storage and evaporation basin</u> | | NORMAL POOL STORAGE (ACRE-FT): <u>11</u> (Estimated) | |
| YEAR BUILT: <u>1980's</u> | | MAXIMUM POOL STORAGE (ACRE-FT): <u>11</u> | |
| STRUCTURAL HEIGHT (FT): <u>35</u> | | EL. NORMAL POOL (FT): <u>796.0</u> | |
| HYDRAULIC HEIGHT (FT): <u>2</u> | | EL. MAXIMUM POOL (FT): <u>798.0</u> | |

☐ YES

☐ NO

☐ YES

☐ NO

| | | | | | | | | | | | | | | | | |
|---|--------------------------------------|--|---|---|---|---|-----|---|--|--|---|---|---|--|----|----|
| NAME OF DAM: <u>Landfill Stormwater Pond Impoundment</u> | | STATE ID #: <u>WI0002780</u> | | | | | | | | | | | | | | |
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | | | | | | | | | | | | | | |
| <u>INSPECTION SUMMARY</u> | | | | | | | | | | | | | | | | |
| DATE OF INSPECTION: <u>September 28, 2010</u> | | DATE OF PREVIOUS INSPECTION: _____ | | | | | | | | | | | | | | |
| TEMPERATURE/WEATHER: <u>Sunny, 70 degrees Fahrenheit</u> | | ARMY CORPS PHASE I: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES, date _____ | | | | | | | | | | | | | | |
| CONSULTANT: <u>GZA GeoEnvironmental, Inc</u> | | PREVIOUS DCR PHASE I: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO If YES, date _____ | | | | | | | | | | | | | | |
| BENCHMARK/DATUM: <u>Mean Sea Level</u> | | | | | | | | | | | | | | | | |
| OVERALL PHYSICAL CONDITION OF DAM: <u>FAIR</u> | | DATE OF LAST REHABILITATION: <u>N/A</u> | | | | | | | | | | | | | | |
| SPILLWAY CAPACITY: <u>0-50% of the SDF or Unknown</u> | | | | | | | | | | | | | | | | |
| EL. POOL DURING INSP.: <u>796</u> | | EL. TAILWATER DURING INSP.: <u>N/A</u> | | | | | | | | | | | | | | |
| <u>PERSONS PRESENT AT INSPECTION</u> | | | | | | | | | | | | | | | | |
| <u>NAME</u> | <u>TITLE/POSITION</u> | <u>REPRESENTING</u> | | | | | | | | | | | | | | |
| <u>William Skalitzky</u> | <u>Senior Env. Specialist</u> | <u>Alliant Energy</u> | | | | | | | | | | | | | | |
| <u>Phil Tegen</u> | <u>Sr. Env and Safety Specialist</u> | <u>Alliant Energy</u> | | | | | | | | | | | | | | |
| <u>Jim Kralick</u> | <u>Hydrogeologist</u> | <u>Wisconsin Department of Natural Resources</u> | | | | | | | | | | | | | | |
| <u>Doug Simon</u> | <u>Geological Engineering</u> | <u>GZA GeoEnvironmental, Inc</u> | | | | | | | | | | | | | | |
| <u>Patrick Harrison, P.E.</u> | <u>Senior Geotechnical Eng.</u> | <u>GZA GeoEnvironmental, Inc</u> | | | | | | | | | | | | | | |
| <u>EVALUATION INFORMATION</u> | | | | | | | | | | | | | | | | |
| E1) TYPE OF DESIGN E2) LEVEL OF MAINTENANCE E3) EMERGENCY ACTION PLAN E4) EMBANKMENT SEEPAGE E5) EMBANKMENT CONDITION E6) CONCRETE CONDITION E7) LOW-LEVEL OUTLET CAPACITY | | E8) LOW-LEVEL OUTLET CONDITION E9) SPILLWAY DESIGN FLOOD CAPACITY E10) OVERALL PHYSICAL CONDITION E11) ESTIMATED REPAIR COST ROADWAY OVER CREST BRIDGE NEAR DAM | | | | | | | | | | | | | | |
| Click on box to select E-code <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30px;">3</td></tr> <tr><td>4</td></tr> <tr><td>2</td></tr> <tr><td>5</td></tr> <tr><td>5</td></tr> <tr><td>N/A</td></tr> <tr><td>1</td></tr> </table> | | 3 | 4 | 2 | 5 | 5 | N/A | 1 | Click on box to select E-code <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30px;">1</td></tr> <tr><td>1</td></tr> <tr><td>3</td></tr> <tr><td></td></tr> <tr><td>NO</td></tr> <tr><td>NO</td></tr> </table> | | 1 | 1 | 3 | | NO | NO |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| N/A | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| NO | | | | | | | | | | | | | | | | |
| NO | | | | | | | | | | | | | | | | |
| NAME OF INSPECTING ENGINEER: <u>Patrick Harrison, P.E.; Doug Simon</u> | | SIGNATURE: _____ | | | | | | | | | | | | | | |

| | | | |
|---|---|---|--|
| NAME OF DAM: <u>Landfill Stormwater Pond Impoundment</u> | | STATE ID #: <u>WI0002780</u> | |
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | |
| OWNER: ORGANIZATION <u>Alliant, WP&L, MG&E</u> NAME/TITLE _____ STREET <u>W8375 Murray Road</u> TOWN, STATE, ZIP <u>Pardeeville, WI</u> PHONE <u>608-742-0715</u> EMERGENCY PH. # <u>608-751-3886</u> FAX _____ EMAIL _____ OWNER TYPE <u>Private</u> | | CARETAKER: ORGANIZATION <u>Alliant, WP&L, MG&E</u> NAME/TITLE <u>Jerald Lokenvitz/Plant Manager</u> STREET <u>W8375 Murray Road</u> TOWN, STATE, ZIP <u>Pardeeville, WI</u> PHONE <u>608-742-0715</u> EMERGENCY PH. # <u>608-751-3886</u> FAX _____ EMAIL <u>jeraldlokenvitz@alliantenergy.com</u> | |
| PRIMARY SPILLWAY TYPE <u>N/A</u> | | | |
| SPILLWAY LENGTH (FT) <u>N/A</u> | SPILLWAY CAPACITY (CFS) <u>N/A</u> | | |
| AUXILIARY SPILLWAY TYPE <u>N/A</u> | AUX. SPILLWAY CAPACITY (CFS) <u>N/A</u> | | |
| NUMBER OF OUTLETS <u>None Present</u> | OUTLET(S) CAPACITY (CFS) <u>N/A</u> | | |
| TYPE OF OUTLETS <u>N/A</u> | TOTAL DISCHARGE CAPACITY (CFS) <u>N/A</u> | | |
| DRAINAGE AREA (SQ MI) <u>None outside impoundment</u> | SPILLWAY DESIGN FLOOD (PERIOD/CFS) <u>N/A</u> | | |
| HAS DAM BEEN BREACHED OR OVERTOPPED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PROVIDE DATE(S) _____ | | | |
| FISH LADDER (LIST TYPE IF PRESENT) <u>N/A</u> | | | |
| DOES CREST SUPPORT PUBLIC ROAD? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | IF YES, ROAD NAME: _____ | |
| PUBLIC BRIDGE WITHIN 50' OF DAM? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | IF YES, ROAD/BRIDGE NAME: _____ | |
| | | MHD BRIDGE NO. (IF APPLICABLE) _____ | |

NAME OF DAM: Landfill Stormwater Pond ImpoundmentSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (CREST)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|-------------------------------------|--|--------------|---------|--------|
| CREST | 1. SURFACE TYPE | Gravel Road, grass | X | | |
| | 2. SURFACE CRACKING | None Observed | x | | |
| | 3. SINKHOLES, ANIMAL BURROWS | None Observed | x | | |
| | 4. VERTICAL ALIGNMENT (DEPRESSIONS) | No depressions Observed | x | | |
| | 5. HORIZONTAL ALIGNMENT | No problems observed | x | | |
| | 6. RUTS AND/OR PUDDLES | No problems observed | | | X |
| | 7. VEGETATION (PRESENCE/CONDITION) | un-mowed grass and trees up to 15 inches in diameter | x | | |
| | 8. ABUTMENT CONTACT | N/A | x | | |
| | | | | | |
| | | | | | |

ADDITIONAL COMMENTS: Trees should be removed and grass regularly cut

NAME OF DAM: Landfill Stormwater Pond ImpoundmentSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (D/S SLOPE)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|------------------------------------|--------------|--------------|---------|--------|
| D/S SLOPE | 1. WET AREAS (NO FLOW) | N/A | x | | |
| | 2. SEEPAGE | N/A | x | | |
| | 3. SLIDE, SLOUGH, SCARP | N/A | x | | |
| | 4. EMB.-ABUTMENT CONTACT | N/A | x | | |
| | 5. SINKHOLE/ANIMAL BURROWS | N/A | x | | |
| | 6. EROSION | N/A | x | | |
| | 7. UNUSUAL MOVEMENT | N/A | x | | |
| | 8. VEGETATION (PRESENCE/CONDITION) | N/A | x | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

ADDITIONAL COMMENTS:

NAME OF DAM: Landfill Stormwater Pond ImpoundmentSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**EMBANKMENT (U/S SLOPE)**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|------------------------------------|--|--------------|---------|--------|
| U/S SLOPE | 1. SLIDE, SLOUGH, SCARP | None observed | x | | |
| | 2. SLOPE PROTECTION TYPE AND COND. | None observed | x | | |
| | 3. SINKHOLE/ANIMAL BURROWS | animal burrows present | | | x |
| | 4. EMB.-ABUTMENT CONTACT | N/A | x | | |
| | 5. EROSION | Two erosional ditches and additional minor erosional features | | | x |
| | 6. UNUSUAL MOVEMENT | None observed | x | | |
| | 7. VEGETATION (PRESENCE/CONDITION) | un-mowed grass, sparse vegetation, and trees up to 15 inches in diameter | | | x |
| | | | | | |
| | | | | | |
| | | | | | |

ADDITIONAL COMMENTS: Trees should be removed and grass regularly cut
animal burrows should be filled
erosional ditches should be repaired

NAME OF DAM: Landfill Stormwater Pond ImpoundmentSTATE ID #: WI0002780INSPECTION DATE: September 28, 2010NID ID #: 0**INSTRUMENTATION**

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|-------------------|----------------------------|--------------------------------|--------------|---------|--------|
| INSTR. | 1. PIEZOMETERS | None present | x | | |
| | 2. OBSERVATION WELLS | MW91A, MW91B | x | | |
| | 3. STAFF GAGE AND RECORDER | None Present | x | | |
| | 4. WEIRS | None Present | x | | |
| | 5. INCLINOMETERS | None Present | x | | |
| | 6. SURVEY MONUMENTS | metal stake water level marker | x | | |
| | 7. DRAINS | None Present | x | | |
| | 8. FREQUENCY OF READINGS | No measurements are taken | x | | |
| | 9. LOCATION OF READINGS | | x | | |
| | | | | | |
| | | | | | |
| | | | | | |

ADDITIONAL COMMENTS:

| NAME OF DAM: <u>Landfill Stormwater Pond Impoundment</u> | | STATE ID #: <u>WI0002780</u> | | | |
|--|----------------------------------|------------------------------|--------------|---------|--------|
| INSPECTION DATE: <u>September 28, 2010</u> | | NID ID #: <u>0</u> | | | |
| DOWNSTREAM AREA | | | | | |
| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
| D/S AREA | 1. ABUTMENT LEAKAGE | None Observed | | | |
| | 2. FOUNDATION SEEPAGE | None Observed | | | |
| | 3. SLIDE, SLOUGH, SCARP | None Observed | | | |
| | 4. WEIRS | N/A | | | |
| | 5. DRAINAGE SYSTEM | N/A | | | |
| | 6. INSTRUMENTATION | None Observed | | | |
| | 7. VEGETATION | Grass and wooded areas | | | |
| | 8. ACCESSIBILITY | | | | |
| | | | | | |
| | | | | | |
| | 9. DOWNSTREAM HAZARD DESCRIPTION | | | | |
| | 10. DATE OF LAST EAP UPDATE | 0 | | | |
| ADDITIONAL COMMENTS: _____ _____ _____ _____ | | | | | |



Appendix D

Photographs



Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
1

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Upstream slope of Primary
Ash Pond Impoundment
(PAP).



Photo No.
2

Date:
9/28/10

**Direction Photo
Taken:**
South

Description:
Upstream slope of PAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
3

Date:
9/28/10

**Direction Photo
Taken:**
Northeast

Description:
PAP Discharge Pipelines:
(2) 12" Diameter



Photo No.
4

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
Discharge Pipeline (behind
12" Diameter pipeline):
(1) 18" Diameter in PAP





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
5

Date:
9/28/10

**Direction Photo
Taken:**
South

Description:
Upstream slope of PAP.



Photo No.
6

Date:
9/28/10

**Direction Photo
Taken:**
South

Description:
Upstream slope, top of
embankment of PAP, and
discharge pipelines.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
7

Date:
9/28/10

**Direction Photo
Taken:**
Southeast

Description:
Upstream slope of PAP and
water treatment sump
discharge pipeline:
(1) 24" Diameter.



Photo No.
8

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:
Upstream slope of PAP, ash
recovery operations, and
discharge pipelines.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
9

Date:
9/28/10

**Direction Photo
Taken:**
Northeast

Description:
Discharge Pipelines in
southeast portion of PAP:
(2) 12" Diameter,
(2) 8" Diameter.



Photo No.
10

Date:
9/28/10

**Direction Photo
Taken:**
Southeast

Description:
Upstream slope of PAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
11

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
Upstream slope of PAP



Photo No.
12

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:
Upstream slope of PAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
13

Date:
9/28/10

**Direction Photo
Taken:**
Northeast

Description:

Upstream slope of PAP
and downstream slope of
Secondary Ash Pond
Impoundment (SAP).



Photo No.
14

Date:
9/28/10


**Direction Photo
Taken:**
Northeast

Description:

Upstream slope of PAP,
downstream slope of SAP
and PAP pump house.





| | | | |
|---|-------------------------|---|-------------------------------------|
| Client Name: U.S. EPA | | Site Location: Columbia Generating Station Pardeeville, WI | Project No. 01.0170142.20 |
| Photo No. 15 | Date: 9/28/10 |  | |
| Direction Photo Taken: Northeast | | | |
| Description: Upstream slope of PAP and downstream slope of SAP. | | | |

| | | |
|---|-------------------------|--|
| Photo No. 16 | Date: 9/28/10 |  |
| Direction Photo Taken: North | | |
| Description: Upstream slope of PAP and downstream slope of SAP. | | |



Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
17

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Upstream slope of PAP.



Photo No.
18


Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Upstream slope of PAP.





| | | | |
|---|-------------------------|---|-------------------------------------|
| Client Name: U.S. EPA | | Site Location: Columbia Generating Station Pardeeville, WI | Project No. 01.0170142.20 |
| Photo No. 19 | Date: 9/28/10 |  | |
| Direction Photo Taken: East | | | |
| Description: Upstream slope of PAP. | | | |

| | | | |
|--|-------------------------|--|--|
| Photo No. 20 | Date: 9/28/10 |  | |
| Direction Photo Taken: Northeast | | | |
| Description: Crest of embankment separating PAP and SAP. | | | |



Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
21

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:
Crest of embankment
separating PAP and SAP.



Photo No.
22

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
Crest of PAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
23

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Crest of PAP.



Photo No.
24

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Downstream slope of PAP





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
25

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Downstream slope of PAP



Photo No.
26

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
Downstream slope of PAP





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
27

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Downstream slope of PAP



Photo No.
28

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Downstream slope of PAP
and concrete lined ditch





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
29

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Downstream slope of PAP
and concrete lined ditch



Photo No.
30

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Upstream slope of SAP,
downstream slope of PAP,
and 8" discharge pipeline
and concrete spillway.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
31

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:

Upstream slope of SAP and
downstream slope of PAP.



Photo No.
32

Date:
9/28/10

**Direction Photo
Taken:**
South

Description:

Upstream slope of SAP and
downstream slope of PAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
33

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Upstream slope of SAP and
downstream slope of PAP.



Photo No.
34

Date:
9/28/10

**Direction Photo
Taken:**
South

Description:
Upstream slope of SAP,
downstream slope of PAP,
and large erosional feature.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
35

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Erosional feature in SAP.



Photo No.
36

Date:
9/28/10

**Direction Photo
Taken:**
South

Description:
Upstream slope of SAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
37

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
Downstream slope of PAP
and animals/bird burrows.



Photo No.
38

Date:
9/28/10

**Direction Photo
Taken:**
Southeast

Description:
Upstream slope of SAP and
SAP pump house.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
39

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:
Upstream slope of SAP and
SAP pump house.



Photo No.
40

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope of SAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
41

Date:
9/28/10

**Direction Photo
Taken:**
Southeast

Description:
Upstream slope of SAP and
equipment shed.



Photo No.
42

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope of SAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
43

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Upstream slope of SAP.



Photo No.
44

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Upstream slope of SAP and
PAP pump house.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
45

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:

Upstream slope of SAP and
downstream slope of PAP
and crest.



Photo No.
46

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:

Crest of SAP and SAP pump
house.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
47

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
Crest of SAP.



Photo No.
48

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Crest of SAP and SAP pump
house.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
49

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Crest of SAP



Photo No.
50

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Crest of SAP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
51

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope of Polishing
Pond Impoundment (PP).



Photo No.
52

Date:
9/28/10

**Direction Photo
Taken:**
South

Description:
Upstream slope of PP and
(1) 8" inlet pipe.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
53

Date:
9/28/10

**Direction Photo
Taken:**
North West

Description:
Upstream slope of PP and
(1) 4' inlet pipe.



Photo No.
54

Date:
9/28/10

**Direction Photo
Taken:**
South

Description:
Upstream slope of PP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
55

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope of PP.



Photo No.
56

Date:
9/28/10

**Direction Photo
Taken:**
Southeast

Description:
Crest of PP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
57

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope and crest of
PP.



Photo No.
58

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope and crest of
PP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
59

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
Crest of PP.



Photo No.
60

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope and crest of
PP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
61

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
PP emergency spillway.



Photo No.
62


Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
PP primary Spillway.





| | | | |
|--|-------------------------|---|-------------------------------------|
| Client Name: U.S. EPA | | Site Location: Columbia Generating Station Pardeeville, WI | Project No. 01.0170142.20 |
| Photo No. 63 | Date: 9/28/10 |  | |
| Direction Photo Taken: South | | | |
| Description: Drainage ditch south of PP. | | | |

| | | |
|--|-------------------------|--|
| Photo No. 64 | Date: 9/28/10 |  |
| Direction Photo Taken: Southeast | | |
| Description: Upstream slope of the Landfill Stormwater Pond Impoundment (LSP). | | |



Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
65

Date:
9/28/10

**Direction Photo
Taken:**
Northeast

Description:
Upstream slope of LSP.



Photo No.
66

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:
Upstream slope of LSP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
67

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:
Upstream slope of LSP.



Photo No.
68

Date:
9/28/10

**Direction Photo
Taken:**
Northeast

Description:
Upstream slope of LSP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
69

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope of LSP.



Photo No.
70

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
Upstream slope of LSP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
71

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Upstream slope of LSP.



Photo No.
72

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Upstream slope of LSP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
73

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Upstream slope of LSP.



Photo No.
74

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
Upstream slope of LSP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
75

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:
Crest of LSP.



Photo No.
76


Date:
9/28/10

**Direction Photo
Taken:**
Southeast

Description:
Crest of LSP.





| | | | |
|---|-------------------------|---|-------------------------------------|
| Client Name: U.S. EPA | | Site Location: Columbia Generating Station Pardeeville, WI | Project No. 01.0170142.20 |
| Photo No. 77 | Date: 9/28/10 |  | |
| Direction Photo Taken: South | | | |
| Description: Upstream slope and crest of LSP. | | | |

| | | |
|--|-------------------------|--|
| Photo No. 78 | Date: 9/28/10 |  |
| Direction Photo Taken: South | | |
| Description: Crest of LSP. | | |



Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
79

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Crest of LSP.



Photo No.
80

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Crest of LSP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
81

Date:
9/28/10

**Direction Photo
Taken:**
West

Description:
Crest of LSP.



Photo No.
82

Date:
9/28/10

**Direction Photo
Taken:**
North

Description:
Crest of LSP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
83

Date:
9/28/10

**Direction Photo
Taken:**
Northeast

Description:
Metal Stake Water level
marker in LSP.

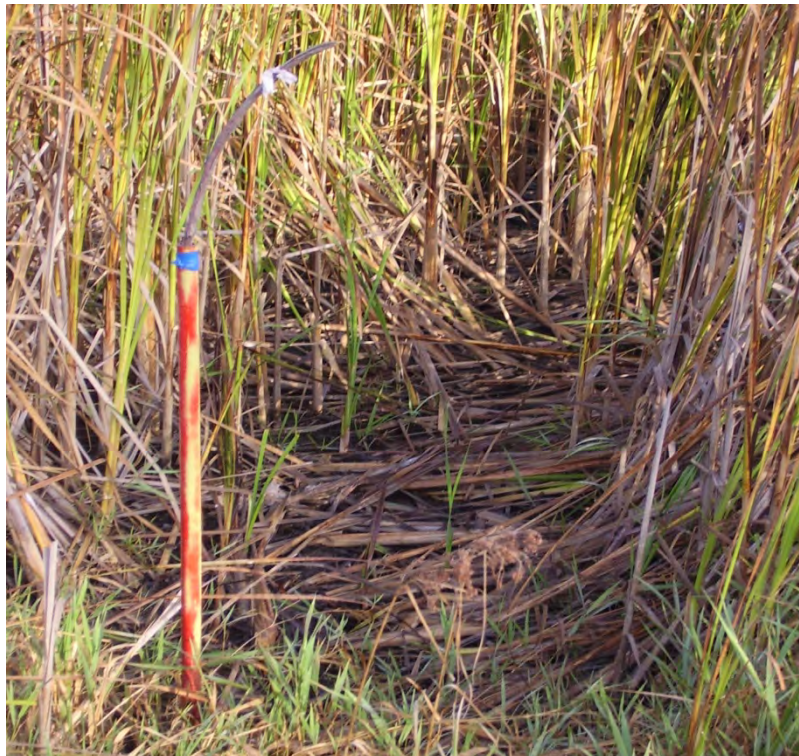


Photo No.
84

Date:
9/28/10

**Direction Photo
Taken:**
Northeast

Description:
Upstream slope and crest of
PP.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
85

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
PAP pump house.



Photo No.
86

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
PAP pump house.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
87

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:

Electronic Water Level
monitor on the PAP Pump
house.



Photo No.
88

Date:
9/28/10

**Direction Photo
Taken:**
East

Description:

PAP pump house.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
89

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
SAP pump house intake.



Photo No.
90


Date:
9/28/10

**Direction Photo
Taken:**
South

Description:
SAP pump house.





| | | | |
|--|-------------------------|---|-------------------------------------|
| Client Name: U.S. EPA | | Site Location: Columbia Generating Station Pardeeville, WI | Project No. 01.0170142.20 |
| Photo No. 91 | Date: 9/28/10 |  A photograph showing a yellow building with a grey door and a small window, situated next to a body of water. A rusty metal structure is in the foreground, and there are trees and bushes in the background. | |
| Direction Photo Taken: North | | | |
| Description: SAP pump house. | | | |

| | | |
|--|-------------------------|---|
| Photo No. 92 | Date: 9/28/10 |  A photograph showing a concrete wall with a yellow sign that says "LIFE KING" on top. A body of water is visible in the background, and there are trees in the foreground. |
| Direction Photo Taken: Northwest | | |
| Description: SAP pump house. | | |



Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
93

Date:
9/28/10

**Direction Photo
Taken:**
Northwest

Description:
SAP downstream slope.



Photo No.
94

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
SAP downstream slope.





Client Name: U.S. EPA

Site Location: Columbia Generating Station
Pardeeville, WI

Project No.
01.0170142.20

Photo No.
95

Date:
9/28/10

**Direction Photo
Taken:**
Southwest

Description:
SAP downstream slope.





Appendix E

Reference List

REFERENCE LIST
COLUMBIA GENERATING STATION
ROUND 7 DAM ASSESSMENT



RMT “Water Table Map (October 2002)” Figure Number 3. Dated January 30, 2003.

Wisconsin Department of Natural Resources Administrative Code NR 333.06 through NR 333.08.

Letter to Mr. Richard Kinch Regarding a Response to Request for Information Under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act. John O. Larson of Alliant Energy. Dated March 31, 2009.

Sargent & Lundy “Ash Basin, Columbia Generating Station Wisconsin Power & Light Co., Portage Wisconsin.” Drawing Number S-37. Dated October 13, 1977.

“Effluent Guidelines ICR Water Flow Diagram.” Wisconsin Power and Light – Columbia Energy Center. Undated.

Letter to Mr. Walter Kosinski Regarding EPA Ash Assessment, Columbia Generating Station, WI. Daniel L. Siegfried of Alliant Energy. Dated September 23, 2010.

Genco Standard Guide for Pond Inspectors. Procedure No. GENCO-0-OP-402-01. Alliant Energy. Dated April 30, 2010.

Sargent & Lundy “Ash Basin Sections & Details.” Drawing Number S-38. Dated June 11, 1974.

Permit to Discharge Under the Wisconsin Pollutant Discharge Elimination System, Wisconsin Power and Light Co. – Columbia. Wisconsin Department of Natural Resources. Dated October 1, 2006.

Alliant Energy Surface Pond Visual Inspection: Columbia Generating Station, Bottom Ash Primary Pond. C Milion, D Hoksh, M Kearns, and J Kearns. Dated April 20, 2010.

Environmental Impact Statement on Ash Basin Design. Dated 1972.

Duck Pond Liner Elevations. Undated.

Primary Pond Levels. Undated.

Email to Mr. Daniel L. Siegfried Regarding Columbia Info. Bill Skalitzky of Alliant Energy. Dated September 29, 2010.

Ash Settling Pond Management Procedure. Dated May 7, 2010.

Federal Guidelines for Dam Safety. Federal Emergency Management Agency. Dated April 2004.

“Construction Observation Report, Site Preparation for Phase I, Module I, Ash Disposal Facility, Columbia Generating Station, Wisconsin Power and Light Company, Town of Pacific, Columbia County, Wisconsin” by Warzyn Engineering Inc. Dated October 30, 1984.



Appendix F

GZA Response to Comments Received on Draft Report

EPA Comments Received on Draft Report

NOTE

Subject: EPA Comments on Alliant Energy Columbia Power Station, Pardeeville, WI
Round 7 Draft Assessment Report

To: File

From: Jana Englander, OSWER, US EPA

Date: January 20, 2011

1. On p. 16, the draft report provides two different ratings for the PP unit - Less than Low, and Low (Second paragraph: Low; and Third paragraph: Less than Low). On p. 57, PP unit is rated Less than Low. Please correct.

State:

From: "Fauble, Philip N - DNR" <Philip.Fauble@Wisconsin.gov>
To: James Kohler/DC/USEPA/US@EPA
Cc: "Lynch, Edward K - DNR" <Edward.Lynch@Wisconsin.gov>, "Kralick, James A - DNR" <James.Kralick@Wisconsin.gov>
Date: 02/11/2011 04:54 PM
Subject: RE: Comment Request on Alliant's Columbia Power Station Draft Report

Jim,

Thank you for the opportunity to comment on the Draft Assessment Report. However, we have reviewed the report and have no substantive comments to offer. Based on our knowledge of the site, the information presented is accurate.

P Philip Fauble, P.G.
Mining & Beneficial Reuse Program Coordinator
Bureau of Waste & Materials Management
Wisconsin Department of Natural Resources
(*) phone: (608) 267-3538
(*) fax: (608) 267-2768
(*) e-mail: Philip.Fauble@Wisconsin.gov

WP&L Comments Received on Draft Report



March 3, 2011

**Via E-mail to: hoffman.stephen@epa.gov
and kohler.james@epa.gov**

Wisconsin Power and Light Co.
An Alliant Energy Company

Corporate Headquarters
4902 North Blitmore Lane
Suite 1000
Madison, WI 53718-2148

1-800-ALLIANT (255-4268)
www.alliantenergy.com

Mr. Stephen Hoffman
U.S. Environmental Protection Agency (5304P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

**Re: Response to Draft Assessment Reports
Columbia Generating Station**

Dear Mr. Hoffman:

This letter is sent on behalf of Wisconsin Power and Light Company's ("WPL") Columbia Generating Station. WPL received the Draft Report, Round 7 – Dam Assessment – Wisconsin Power & Light, Columbia Generating Station, dated January 17, 2011 ("Draft Report"). The site assessment was conducted by the United States Environmental Protection Agency's ("EPA") contractor GZA GeoEnvironmental, Inc. on September 28, 2010. EPA's cover email accompanying the Draft Report requests that comments be submitted to USEPA by March 7, 2011, and provides for a business confidentiality claim covering all or part of the information.

CONFIDENTIAL BUSINESS INFORMATION CLAIM

WPL is claiming business confidentiality for both the Draft and Final Reports associated with the site assessment of the coal combustion material management units at the Columbia Generating Station and for the comments submitted in this letter in their entirety, a claim which is being made in accordance with 40 C.F.R. Part 2, Subpart B.

Per the criteria established by 40 CFR. Part 2, Subpart B, §2.208, the documents for which confidential treatment is requested are entitled to confidential treatment because: (1) this claim is timely and has not been waived, (2) WPL has taken reasonable measures to protect the confidentiality of the information and intends to continue to take such measures, (3) the information is not reasonably obtainable without WPL's consent by other persons by use of legitimate means, (4) no statute

specifically requires disclosure of this information, and (5) the disclosure of the information is likely to cause substantial harm to WPL's competitive position.

All of the documents for which confidential treatment is requested help WPL maintain its competitive position. WPL protects the confidentiality of this information by making it available only to those within the company with a legitimate need to know the information for purposes of performing their jobs.

COMMENTS ON THE DRAFT ASSESSMENT

Listed below are the comments associated with the Draft Report for the WPL – Columbia Generating Station.

Italics indicate language in Draft Report. **Bold** indicates suggested language.

Landfill Storm Water Pond (LSP) Rating:

1. The Landfill Storm Water Pond was rated as "*Fair*" by the assessment team. We agree that certain items require attention, but the pond should be rated as "**Satisfactory**" for the following reasons:
 - Storm Water Pond Levels – Maintaining the level in the pond at 794.85 feet was just incorporated into the new Landfill Plan of Operations that was submitted to the Wisconsin Department of Natural Resources (WDNR). During the time of the assessment, the storm water pond was being managed based on the old Landfill Plan of Operations for ash contact water in Module 1.
 - Storm Water Pond Embankments – We agree that there are a number of trees in the upper portion of the embankments that need to be removed. However, the widths of the embankments are approximately 75 feet with the top crest elevation of 825 feet around the entire pond except near the active portion of the landfill.
 - Satisfactory Rating – Appendix C, Page 2 of the Inspection Summary for the Landfill Storm Pond states "*Satisfactory*"

References regarding the rating of the landfill storm water pond can be found on the following pages: Cover Letter (second paragraph); Page i Executive Summary (fifth paragraph); Page 14, Section 2.1.15 (first paragraph); Page 17, Section 3.1 (first paragraph); Page 18, Section 4.0.

Executive Summary:

1. Page i, Second Paragraph, third sentence – The purpose of the Primary and Secondary Ash Ponds is not for the "*purpose of storing CCW waste*". The purpose of the ponds is (1) to provide treatment of the process wastewater to ensure compliance with the site WPDES permit, (2) to efficiently remove settled ash for beneficial reuse or landfilling, and (3) to reuse the ash pond water in our various processes to reduce

impacts on our source water and receiving stream. Please reword this sentence to reflect our operations.

2. Page ii, Studies and Analyses, second and third recommendation - Please find the attached Columbia Ash Pond Analysis report prepared by Aether dba on behalf of the Columbia Energy Center. Both of these recommendations should be removed.

Primary and Secondary Ash Ponds:

1. Significant Hazard Ratings for the Primary and Secondary Ash Ponds – Both ash ponds were rated as “*Significant Hazard Structures*” based on the assessors’ opinion and guidance from EPA. We believe both of the ponds should be rated as “**Low Hazard Potential**”, based on EPA guidance, for the following reasons:
 - Misoperations – The ash ponds were designed to remove accumulated ash on an as needed basis. The influent channel of the Primary Pond is where most of the ash is allowed to settle out. This settled ash is removed two times per week throughout the year, except during the winter months in which the ash is removed monthly (or on an as-needed basis). Our operations and maintenance of the ponds and equipment does not meet the intent of misoperations. In addition, the plants ability to reuse ash pond water in other plant operations ensures the pond system is operating in an effective manner.
 - Economic Loss – A failure of these ponds would not cause economic loss since there is very little ash in the pond and there are no other businesses in the immediate area that cause a concern.
 - Environmental Damage – What little ash is in the pond would stay within the confines of the pond or be captured in the lowlands of Duck Creek. A release of ash from this pond would not be in the same level as the TVA Kingston release.
 - Disruption of Lifelines – There are no bridges or other lifelines downstream from the ash pond that would prevent or alter emergency vehicles or services as a result of a failure with the secondary emergency ash pond.

References regarding the rating of the primary and secondary ash ponds can be found on the following pages: Page i, Executive Summary (last paragraph); Section 1.2.10 (two references, first and last paragraph); Appendix C, Primary and Secondary Ash Pond Inspection Forms.

Section 1.2.3:

1. Page 2, Purpose of the Impoundments – As mentioned in our comment above for the Executive Summary, the paragraph describing the purpose of the primary and secondary ash pond needs to be changed. The purpose of the ponds is (1) to provide treatment of the process wastewater to ensure compliance with the site WPDES permit, (2) to efficiently remove settled ash for beneficial reuse or landfilling, and (3) to reuse the ash pond water in our various processes to reduce impacts on our source water and receiving stream.

2. Page 3, Second and Third Paragraph, Secondary and Polishing Pond Ash Ponds – The statements used to describe the operational conditions of Secondary and Primary Ash Ponds are not accurate. This pond can receive water from the primary ash pond through the pumphouse located on the primary pond. In accordance with the site WPDES permit (WI0002780), the site can pump water from the secondary pond to the polishing pond and through Outfall 002 if certain conditions regarding Whole Effluent Toxicity (WET) testing are met. Water levels in the primary ash pond dictate when and if the site pumps water into the secondary ash pond. Due to past positive results with WET testing of the discharge (2004), a decision was made to discontinue the use of the pumphouse on the secondary ash pond and reuse or recycle the water in the primary ash pond.

Section 1.2.5:

1. Page 4, first paragraph, Primary Ash Pond Wastestreams – Please insert **“non-chemical boiler/turbine/precipitator wash or rinsate water”** to describe the type of wash waters from these cleaning operations. Boiler/turbine/precipitator washes can be chemical and non-chemical in nature. If a chemical is used, the chemical clean material and the first two rinses are captured and stored in tanks pending analysis. This material is processed in the boilers per the sites Title V Operating permit.

Section 1.2.5:

1. Page 5, first paragraph – Please remove *“Prior to being deactivated in 2004”* and start the sentence with *“The SAP....”*. Remove the sentence *“Since 2004”* and consider the following: **“Waters transferred from the PAP and precipitation that collects in the SAP either infiltrates into the ground or evaporates”**.

Section 1.2.6:

1. Page 5, second paragraph – Please remove *“The PP is currently inactive and is not currently permitted to receive CCW waste materials”*. The PP can receive treated effluent from the Secondary Ash Pond and discharge through Outfall 002 if certain conditions of the WPDES permit are met. Please insert the following: **“The PP can receive effluent from the SAP and discharge through Outfall 002 if certain conditions are met as listed in the WPDES Permit. However, since 2004, the PP has not received any effluent from the SAP”**.

Section 1.2.8:

1. Page 7, first paragraph, WPDES Permit – Please remove *“EPA”* and insert **“WDNR”** since the department is an authorized State to issue and enforce permits. Also, remove *“NPDES”* and insert **“WPDES”** since the permit was issued by the WDNR.

Section 2.1.4:

1. Page 12, first paragraph, third and fourth sentence – In the sentence *“The backwaters of the Wisconsin River are generally near the downstream slope of the SAP”*. The nearest body of water to these ponds is Duck Creek and not the Wisconsin River.

During the assessment, the flood waters from the Wisconsin River backed up into Duck Creek. During non-flooding events, there is a minimum of 200 feet from the toe of the pond to Duck Creek. Please see Figure #2 of the report as a reference. Please note that on Figure #2, Duck Creek backwaters are labeled as the Wisconsin River.

Section 2.1.9:

1. Page 13, first paragraph, third and fourth sentence – Same comment as Section 2.1.4 above. In the sentence *"The backwaters of the Wisconsin River are generally near the downstream slope of the PAP"*. The nearest body of water to these ponds is Duck Creek and not the Wisconsin River. During the assessment, the flood waters from the Wisconsin River backed up into Duck Creek. During non-flooding events, there is a minimum of 200 feet from the toe of the pond to Duck Creek. Please see Figure #2 of the report as a reference. Please note that on Figure #2 and #3, Duck Creek backwaters are labeled as the Wisconsin River.

Section 2.5 and Section 2.6:

1. Page 16, Hydrologic/Hydraulic Data and Structural Stability Information – Please find the attached Columbia Ash Pond Analysis report prepared by Aether dbs on behalf of the Columbia Energy Center. Please revise these sections to reflect the information in the Aether dbs report.

Section 3.2:

1. Page 17, List number 2 and 3, Hydrologic/Hydraulic Data and Structural Stability – Please find the attached Columbia Ash Pond Analysis report prepared by Aether dbs on behalf of the Columbia Energy Center. Please revise this section to reflect that the studies have been completed.

Section 3.3:

1. Page 17, Recommendation #6, Hydrologic/Hydraulic Data and Structural Stability – Maintaining the level in the pond at 794.85 feet was just incorporated into the new Landfill Plan of Operations that was submitted to the Wisconsin Department of Natural Resources (WDNR). During the time of the assessment, the storm water pond was being managed based on the old Landfill Plan of Operations for ash contact water in Module 1.

REQUEST FOR CONFERENCE CALL WITH GZA TO REVIEW COMMENTS

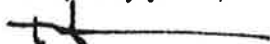
Finally, because of the technical complexity and factual detail contained in the Draft Report, WPL believes it would be efficient and helpful to conduct a conference call between WPL and GZA GeoEnvironmental to review the details of these comments prior to its preparation of a Final Report. WPL would be happy to coordinate the time and set up a call-in number. WPL specifically requests such a discussion.

Confidential Business Information

Mr. Stephen Hoffman
March 3, 2011
Page 6

WPL appreciates this opportunity to provide comments on the Draft Report for the Columbia Generating Station. If you have any technical questions, please contact William Skalitzky at (608) 458-3108. If you have any legal questions, please contact Dan Siegfried at (319) 786-4686.

Very truly yours,



Terry L. Kouba
Director, Generation Operations

cc: James Kohler - EPA
William Skalitzky - AECS
Dan Siegfried - AECS
Jerald Lokenvitz - WPL

GZA Response to Comments Received on Draft Report



APPENDIX F

GZA Response to Comments Received on Draft Report

GZA provides the following response to the March 3, 2011 comments to the draft report provided by Alliant Energy (Alliant):

Landfill Storm Water Pond (LSP) Rating:

Alliant states that the rating of the LSP should be "Satisfactory" rather than "Fair" as rated by GZA based on the following:

- *Storm Water Pond Levels – Maintaining the level in the pond at 794.85 was just incorporated into the new Landfill Plan of Operations that was submitted to the Wisconsin Department of Natural Resources (WDNR). During the time of the assessment, the storm water pond was being managed based on the old Landfill Plan of Operations for ash contact water in Module 1.*
- *Storm Water Pond Embankments – We agree that there are a number of trees in the upper portion of the embankments that need to be removed. However, the widths of the embankments are approximately 75 feet with the top crest elevation of 825 feet around the entire pond except near the active portion of the landfill.*
- *Satisfactory Rating – Appendix C, Page 2 of the Inspection Summary for the Landfill Storm Water Pond States "Satisfactory".*

Deficiencies observed at the LSP included sparse vegetation, erosional features, animal burrows, and the presence of large diameter trees. Given the deficiencies observed, it is our opinion that the rating of "FAIR" is appropriate.

Executive Summary

1. Our report has been modified to reflect Alliant's stated purpose of the Primary and Secondary Ash Ponds as provided in the comments to the draft report.
2. We understand that Alliant has conducted hydrologic, hydraulic and slope stability analysis of some of the impoundments since we drafted our report. Our report has been modified to reflect our review of the additional information provided.

Primary and Secondary Ash Ponds

With respect to the Primary and Secondary Ash Ponds, Alliant stated the following:

We believe both of the ponds should be rated as "Low Hazard Potential", based on EPA guidance, for the following reasons:

- *Misoperations - The ash ponds were designed to remove accumulated ash on an as needed basis. The influent channel of the Primary Pond is where most of the ash is allowed to settle out. This settled ash is removed two times per week throughout the year, except during the winter months in which the ash is removed monthly (or on an as-needed basis). Our operations and maintenance of the ponds and equipment does not meet the intent of misoperations. In addition, the plants ability to reuse ash pond water in other plant operations ensures the pond system is operating in an effective manner.*



The hazard classification is based on the potential consequences of ‘...failure or misoperation...’; not the observed operations. Therefore, the adequacy of the current operations is immaterial to the hazard classification.

- *Economic Loss - A failure of these ponds would not cause economic loss since there is very little ash in the pond and there are no other businesses in the immediate area that cause a concern.*

Economic losses would be mostly limited to owner property; therefore, we have removed this reason as justification for the significant hazard classification.

- *Environmental Damage - What little ash is in the pond would stay within the confines of the pond or be captured in the lowlands of Duck Creek. A release of ash from this pond would not be in the same level as the TVA Kingston release.*

It is our opinion that a failure could result in environmental damage that warrants a “Significant Hazard Potential” rating. The magnitude of the damage relative to the TVA Kingston release is immaterial.

Section 1.2.3

GZA has revised the purpose of the impoundments to reflect the comments provided by Alliant. In addition, the operational conditions of the Secondary Ash Pond and Polishing Pond have been revised to reflect the information provided in the Alliant comments.

Section 1.2.4

GZA has revised to reflect the information provided in the Alliant comments.

Section 1.2.5

GZA has revised to reflect the information provided in the Alliant comments.

Section 1.2.6

GZA has revised to reflect the information provided in the Alliant comments.

Section 1.2.8

GZA has revised to reflect the information provided in the Alliant comments.

Section 2.1.4

GZA has revised Section 2.1.4 to state: *During our Site visit, the floodwaters of the Wisconsin River backed up into Duck Creek and covered the downstream toe and part of the northern embankment as shown in Photos 24 through 26.*

Section 2.1.9

GZA has revised Section 2.1.9 to state: *During our Site visit, the floodwaters of the Wisconsin River backed up into Duck Creek and covered the downstream toe and part of the northern embankment as shown in Photos 93 and 95.*

Section 2.5, 2.6, 3.2, 3.3



We understand that Alliant has conducted hydrologic, hydraulic and slope stability analysis of some of the impoundments since we drafted our report. Our report has been modified to reflect our review of the additional information provided.

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